

Attachment C

Pre-Regulation Public Meeting
Topeka, Kansas
April 16, 2003

Don Carlson - I have a big introductory speech that I would give to the crowd but since we don't have a crowd I'll dispense with that. Basically what we're doing tonight is we're in the process of developing a set of regulations that will address municipal, commercial, and industrial wastewater lagoon systems. It's primarily targeted for protecting groundwater and this is an initiative that Secretary Bremby has decided that he wants to raise to a high priority and we are in the process of implementing his directive in that regard. What I have is two presentations that I'll try to make real quick tonight so if you folks have any comments you can provide them. Since we have such a small crowd if you want to speak I'm sure we're not going to run out of time, we've got the room until 10:00. So that means I can talk an awful long time unless you guys want to talk. So dispensing with the normal.

The first presentation that I'll be giving you is for those several members here that may not be familiar with the regulatory adoption process. The two major points that I'm going to try to stress here is the fact that this is not a quick process. There will be several opportunities during this process to provide public input and comments in that regard. Typically when KDHE develops regulations we have regulatory requirements by law that we're required to address. That's the bottom there - it takes 16-25 weeks. Right now we do not have a set of regulations that we're ready to move forward with. We're going out to the public and we're in a pre-regulation process. What I'm going to do is go through a number of steps in this pre-regulation process that we will address and again, at this point here we will begin developing regulations consistent with statutory and regulatory requirements that we have to abide by as a part of the reg adoption process.

One of the first things we end up doing is staff will identify a list of concepts and issues that we feel we need to evaluate or address. We then take those concepts and issues and if we decide we're going to go ahead and pursue the development of regulations we need to evaluate whether there are existing regs that need to be modified or whether there are regs that need to be developed to address those concepts and issues. During this process we also have to evaluate whether or not there's going to be a statutory change. If that's required as a part of this process then we have to go before the legislature and get a statute before we can adopt these regulations or a portion of those regulations. In this case we don't think we really need anything but depending upon what kind of comments and feedback and input from the public we get, it may be necessary. What we're doing tonight is basically this step, we're in the outreach phase. We have developed these concepts and issues to kind of prime the pump so to speak to get people thinking about what they want to see in the regulations, what they don't want to see in the regulations, and we're in the process of going out and meeting with governmental entities, the

regulated community, and the public to solicit ideas as to what they want to see and don't want to see in the regulations. We will take the comments that we receive during these public meetings, we will evaluate and categorize the input that we get, try to come up with and see what kind of changes in the concepts and issues that we were proposing. Hopefully we will come up with a whole lot of good ideas as to what needs to be addressed, doesn't need to be addressed or possibly changed. At that point in time we will go ahead and move forward to develop draft regulations. We will run them through our internal staff to look at technical issues, how they are to be implemented, if there's any technical glitches in the regulations. We also have legal staff that will look at the legal provisions to make sure that any regulations that we develop are enforceable, that there's no problems there, and then we also have our management that will basically look at these regulations from his policy and management standpoint. So once that internal review is done we move on to developing a second document that has to accompany each regulation package and this is a regulatory impact statement. The regulatory impact statement in the case of an environmental program, such as KDHE, is composed of three items. All the other state agencies only have to deal with two. One is, we have to provide a summary as to the regulatory impact of what we're actually proposing. The unique thing with respect to an environmental agency is the environmental impact. We have to basically summarize what impact these regulations will have in regard to enhancing and protecting the environment. A common element with respect to all regulatory impact statements is the fiscal impact and that's going to relate to what kind of fiscal impact this will have on the regulated entity as well as state and other regulatory agencies that may be involved with the implementation of these regulations. Once we make the changes, develop the draft regulations, and develop the regulatory impact statement, we will then basically present these to the secretary and at that point in time the secretary will make a decision as to whether or not we're going to move through the formal regulation adoption process with the regulations that we're proposing.

At this point in time, basically we've moved from what I call the pre-reg process into the formal state agency regulation process, adoption process. That's composed of nine steps. These are requirements by statute and by regulation for each state agency to adopt regulation. As I pointed out before, this is not going to be quick process. Assuming I have a set of draft regulations today and a regulatory impact statement today ready to go, the soonest that I would be able to move it through the system is 16 weeks, more likely it will be somewhere between 16 and 25 weeks. So there's not the situation that regs will be developed and implemented overnight.

The first thing we do is we take this reg package that we've developed and we send it to the Department of Administration. You can think of this as your grade school grammar teacher. They beat you to death with spelling, format, and form. We play post office box bingo until we come to an agreement that they accept those regulations and at that point in time we send them over to the Attorney General's office. The Attorney General's staff review the regulations from the standpoint to make sure that the agency has adequate statutory authority to adopt and implement these regulations and we make whatever revisions they require at that time. If the Attorney General's staff requires revisions then whatever revisions we make to the regulations have to go back to the Department of Administration for their approval. So, at some point in

time going through the Department of Administration and the Attorney General's office everybody comes to an agreement and we now have something we can go ahead and send out to the public for consideration. We're required by law to publish the notice in the Kansas Register of our intent to propose to adopt these regulations. What we will do is similar to what we did to this public meeting. We will public notice it statewide in some press releases. We will try to get a page on our website so people will be able to access the website for information. We also have a mailing list that we have sent out to the people. Every county in the state, every city in the Equus Beds Region, environmental groups, groundwater management district groups, other state agencies, and a list of all our consulting engineers that we deal with on a routine basis. They will be notified once we get a reg package put together as well as anybody who's not on that list that attends these meetings. We're required to public notice the regulations for a period of 61 days and during this time frame if you have comments this is one of your opportunities to submit written comments to us regarding the draft regulations. During this 61 day period we get to visit with the legislature, the Joint Committee on Rules and Regulations which includes members of the Senate and the House meet and provide us with their comments and critique as to what they like or don't like about the regulations. At the end of the 61 day public comment period we're required to hold a minimum of one hearing and more than likely it will be a hearing or hearings in regard to the proposal. Again this is an option where you will be able to provide input to us either in writing or orally at the public hearings. We obtain approval, we come back and evaluate the comments during the public hearing process from the Administrative Rules and Regs Committee during the public comment period. If we decide to make changes to the regulations we make modifications, we go through the process again dealing with the Department of Administration and the Attorney General's Office. At some point in time the rules and regs are acceptable to them at which time the Secretary decides to adopt the regulations and publishes in the Kansas Register his intent to adopt the regulations and the regulations take affect 15 days after publication in the Kansas Register. With that I'll go to the other presentation.

The reason we're here tonight is we looking at developing some regulations to address municipal, commercial, and industrial wastewater lagoon systems. There's a number of other projects that are associated with Secretary Bremby's initiative to try to come up with practices and regulations to help protect groundwater resources in Kansas. One of them deals with our underground storage operations that deal with liquid petroleum gas and natural gas storage. There's very large brine ponds associated with those industries and a set of regulations in temporary form have been adopted and they will be moving forward towards permanent adoption. As a separate project, a similar project to what I'm doing here will be done with respect with livestock waste lagoon systems in Kansas. Again, what we're trying to do here is these are concepts and issues that we wanted to throw out to people to have them evaluate them, hopefully to spawn some ideas and some comments. Hopefully to come up with some better ways of proposing what we're looking at. A quick overview of what we're going to be doing is we're going to target sensitive groundwater areas. Primarily what we're looking at here very shallow groundwater systems. One of the areas that we're going to concentrate on will be the Equus Beds area. One of the things we're going to be doing with our soil liner systems is we're proposing to reduce the permeability requirement from 1/4-inch to 1/10-inch. We're looking at

developing a set of brand new regulations that specifically address and target membrane liners, synthetic membrane liners, plastic liner systems and this is intended to replace a policy or guidance document that we developed back in 1990 and are currently implementing.

In regard to the municipal, commercial, and industrial lagoon liner systems, in municipal systems we're allowing the option of either a soil or a single membrane liner system. On the industrial side we're looking at trying to come up with a tiered system depending upon what the industry is proposing to direct to the wastewater lagoon system. Right now we're looking at three tiers. We're looking at enhancing the amount of information that will be required as a part of the pre-design process. This is the hydrogeologic information we're looking at. We'll basically require increased information on soils, the geology of the area and groundwater. Again, we want to develop specific design criteria and adopt that as a regulation for the synthetic membrane liners. We also, both for soil and for the synthetic membrane liners, want to establish construction and post-construction monitoring and certification requirements and we also want to come up with regulations that address specifically the closure requirements for a lagoon system.

Getting into the details, we're looking at modifying our current soil liner permeability rate reducing it from 1/4-inch per day to 1/10-inch per day. New lagoon systems, if you're going to site one, locate one in an area with a very shallow groundwater table, if it's 10 feet or less, we're going to prohibit the location of the lagoon at that location. Lagoons that are going to be proposed to be constructed over the Equus Beds right now we're throwing this out for comments and consideration, we're proposing that it be mandatory that an impermeable synthetic membrane liner be used. Lagoons that are in existence at this point in time, we're going to grandfather them in unless there is evidence to indicate that there's a public health or an environmental threat. In regard to the industrial lagoon systems we talked about a three tiered approach, we're proposing to treat industries that generate domestic wastewater only similar to municipal and commercial systems. They'll be able to use a soil liner system if they can meet the 1/10-inch per day criteria. If they can't, they're required to use a single impermeable membrane liner system. There may be a number of industries that typically generate relatively innocuous type of wastewater, non-contact cooling water, maybe a rock quarry, that washes rubble that they produce. The rock dust solids we feel represents a very low pollution potential from the standpoint of groundwater in the area so we're going proposing to offer the use of a soil liner system or a single impermeable synthetic membrane liner system if the 1/10-inch per day can't be met. For the typical industrial waste systems where we're talking about solvents, greases, hydrocarbon products, heavy metals and other toxic materials, what we're looking at is a dual liner system with an intermediate leak detection system. Soil liners, again, 1/10-inch per day or less criteria for domestic waste or low pollution potential type waste. For the process waste industrial systems we're looking at a double liner system with an intermediate leak detection system and that leak detection system having the capability of being dewatered. As a part of the design requirements for the synthetic liner system whether it's a single liner or dual liner system we're looking at a 1/64-inch per day permeability seepage, leakage whatever terminology you want to use criteria for that liner. The hydrogeologic information for soil liners that we're looking at basically is we're requiring or going to require either borings or excavations 10 feet below the proposed pond bottom. Again,

this is going to be done for a number of reasons. One to ensure that we have a 10 foot separation distance between the bottom of the pond and the groundwater table. It's also to be able to collect samples for the enhanced hydrogeologic information that we're looking for. We're looking at requiring one boring or excavation per acre of lagoon. Again, from the standpoint of the soils information that's going to be needed for the design of the soil liner system. These borings or excavations can be used to collect samples for the laboratory work that needs to be done for the soil liner design. We want to be requiring as a proposal of the regulations that the information be summarized and submitted as part of the design for the lagoon system and we want to be able to be notified prior to any hydrogeologic work done at the site. If we have questions or concerns about a given site we want to be able to have the capability of having staff out there to take a look while the borings or the excavations are being done. The soil liner design, we're going to require the submission of a hydrogeologic information and soil testing data calculations for the proposed soil liner. We're looking at some type of requirement that at least a minimum of one foot of natural or compacted soil liner be provided for the soil liner system. One of the things that we're looking at for both the impermeable liners, synthetic membrane liners and the soil liners is quality assurance, quality control during construction. What we're looking at in regard to soil liner systems is to require the development and submission of a soil liner post-construction testing protocol. We want to be able to agree on a testing protocol up front prior to the start of construction so that everybody knows what the pass/fail criteria is going to be. We want to require post construction certification by a licensed professional engineer that the lagoon was constructed per KDHE approved plans and specifications. Obviously that's going to require monitoring by the engineer or his designee during construction. For the impermeable synthetic membrane liner requirements again we're talking about developing a whole new set of design standards and regulations that will become enforceable. We're looking at for a liner, whether it's a one liner or two liner system, each liner having a minimum thickness of 30 mils. We want to have a requirement whereby the liner manufacturer provides a certification as a part of the design process that the liner is capable of containing the materials that we're going to be putting into the pond. The reason for this is a lot of these liners have proprietary specifications in regard to how they are formulated. The liner manufacturer is the best one to be able to determine if that liner is compatible with that material, particularly when you're talking about solvents or hydrocarbon products. Embankment requirements, basically the physical construction of the lagoon system to ensure that we don't get settlement slump that will stress the liner system. One of the points we put in there that we assume will get a lot of discussion between liner manufacturers and design engineers is that the liner installation is to be conducted per the manufacturer's instructions. Again, we're seeking input on that item in particular. We want to require the development of the seam testing protocol. Again, we wanted to establish this up front prior to the start of installation. We want to know what the pass/fail requirement is. We looking at testing 100% of the seams. We want to require that the design conforms to the minimum standards of design and construction. We have a set of design standards right now that basically these regulations will supplement those, not replace them. Again, in regard to any hydrogeologic work done at a lagoon where a synthetic membrane liner system is going to be employed we want to be notified once that's going to be done so we can witness it if we think it's necessary. Municipal and commercial lagoons, industrial lagoons that have domestic waste only, we're looking at allowing

them to employ single impermeable synthetic membrane liners as opposed to a dual one for an industrial process waste. With the process waste one, again, we're going to have a primary liner, a secondary liner, an intermediate leak detection system, and the capability of dewatering the space between the two liners. Industrial lagoons, we're looking at requiring a minimum of two cells. Part of this has to do with being able to provide some operational control if we do get a leak in one of the lagoon cells. For industrial lagoons we're looking at requiring a minimum of two feet of compacted soil beneath the secondary liner. This is not to provide a barrier for leakage because the secondary liner's provide that. This is basically to make sure we have an adequate layer that is basically bedding and protection for the secondary liner. Impermeable synthetic membrane liner, again we're into the quality assurance/quality control to make sure that whatever is built provides adequate protection. We want to require development and submission of a synthetic membrane liner post construction testing protocol. We want to agree up front with how the liner is going to be tested and ensure that it passes requirements. Require post construction certification by a licensed professional engineer that the liner was installed consistent with the manufacturer's requirements. Again, this is going to require some type of oversight or monitoring during the installation process. If the testing protocol is going to involve some type of whole pond seepage test, leakage test, for the liner we may desire to be available to witness this so again we want to put in some type of requirement to provide notification to KDHE when that whole pond seepage test will be conducted. There will be some type of text in there that there are a number of federal and state requirements such as effluent guideline standards that EPA has developed that have in effect sizing and design requirements for lagoon systems. One example would be the livestock waste lagoons. There are other provisions that a designer and an operator need to be aware of when they are constructing a brand new lagoon system so some type of provision needs to be put into the regulations to make them aware of these requirements. One of the things that we looked at when we were developing the livestock waste lagoon regulations a number of years ago that the legislature put in the statute was concern over vertical penetrations particularly when we're dealing with a soil liner system. So we're looking at putting in a requirement that addresses the notification if there are any water, oil, or gas wells in the area, whether they're active or abandoned. Basically if there's indication that there may be an abandoned in the area but you can't locate it we want to put a warning on the plans and specifications that a well may be there so that if the contractor, during the construction excavation happens to run into it he'll know what we're dealing with here. There will be a requirement in there that if we run into one of these wells that we hadn't previously identified the work around that well is to be terminated until such time as we can evaluate what's there and make sure that the well is adequately plugged. Work around the area can continue unless it's going to adversely impact the well that we run into. Monitoring wells, because of the change in technology that's going on here in this field, we want to be able to put in provisions that allow us enough flexibility that if there's a better way to come up with monitoring groundwater, lagoon leakage, whatever, that we have the flexibility to evaluate and adopt those provisions as an equivalent technology in lieu of just simply requiring monitoring wells. One of the things we want to do though is we want to make sure that there's an agreement if a monitoring well or monitoring system is put in that we are in agreement with the installation and the proposal that is being designed for the project.

Plan and specification approval. One of the things that we're going to try to stress, and I haven't figured out how to do this yet, is what we are going to be proposing here are minimum standards. The design engineer and the operator both have the responsibility to make sure that a functional design is provided and that the operator operates the system in an appropriate manner so that pollution does not occur. We want to require that any deviation from plans and specifications get our approval prior to the construction actually taking place so we'll make that a part of the regulation package.

Closure requirements. At some point in time a company may decide to go out of business, the functional life of the lagoon system may be reached, whatever reason, there's a desire no longer to use it. We want to come up with a set of regulations that at this time do not exist that require notification of KDHE (1) that the lagoon operation is proposed for closure and abandonment. One of the things that will be required is that the operator maintains a water pollution control permit until such time as KDHE signs off on the closure of the facility. We want to require for new lagoons, expansions or significant modifications the development of a closure plan that will be submitted to us for review and approval. The regulations will have to somehow develop the contents of what the closure plan will include. We will require some type of provisions in there as to when a closure plan needs to be modified or upgraded and one of the big items is once KDHE approves or gives an operator authorization to close the facility the time frame in which we expect the lagoon system to be closed out physically.

Last, but not least, we will provide some type of a variance process that will hopefully allow us to make some sound engineering technical decisions on things that we hadn't considered during this regulatory process. With that, that's the end of my dog and pony show.

I'll go ahead and open the floor for comments. Do we have anybody that signed up to speak?
Mr. McClelland.

Martin McClelland - What are the concerns that are prompting this thing? Further requirements other than the existing clay liners and can they be addressed by reducing the inflow?

Don Carlson - I don't understand what you mean by reducing the inflow.

Martin McClelland - If it's nitrates or something like that.

Don Carlson - It depends. The general concern right now is the agency and the Secretary has received numerous comments and concerns by governmental entities, by the general public, that they feel that additional safeguards to groundwater resources need to be provided. A large emphasis on these comments have been directed in regard to the Equus Beds Aquifer, that's why we highlighted that in this regard. There are a number of studies that have been done by the Kansas State University in regard to livestock facilities. Basically one of those studies indicated that with typical construction practices in the soils statewide, unless you're in the sand, that you can get better than 1/4-inch per day. Now one of the questions in some of the comments we've

received to date is people have asked us to look at maybe some type of tiered system where it's not a 1/10-inch statewide. So if you've got any suggestions as to what the criteria is, please offer them. What we're looking at is a number of things. Part of our concerns with the synthetic liners, the impermeable synthetic membrane liners for the industrial process waste is while we may be getting adequate capture for ammonia or nitrates or whatever, a lot of the industries generate waste pollutants that are highly mobile that soil liners don't stop. Brines, typically salt. A lot of solvents don't tie up with the soil particles, clay matrix and move readily through particularly in a highly permeable soil that has a high percentage of sand in it. The studies have also indicated, which makes common sense, that the more separation between the bottom of the pond and the groundwater table you can provide the better capture you get and reduce the potential for polluting groundwater. So that's some of the things that have been driving this. It's just an enhanced groundwater resources in Kansas are very valuable. The highlight in regard to the Equus Beds, if my memory serves me, we're looking at a half a million people being served by the Equus Beds as a public water source or private water source. So for a fairly small aquifer that encompasses parts of I think six counties, you're looking at about a half a million people. So obviously they're concerned about their drinking water. We're also finding a lot of instances as part of our remediation program activities a lot of lagoon systems that were constructed in the 60s and 70s with people doing what they thought was right at the time, putting in lagoons rather than letting the wastewater flow down the ditches into the creeks, have created groundwater hot spots because the soils didn't quite catch or retain the materials that were sent into it. Hindsights 20/20. So the fact that emphasis has been directed at Secretary Bremby regarding protecting groundwater resources, he's wanted to basically make sure that we come up with policies, practices, regulations that ensure that we try to protect the groundwater resources in the state as best we can.

Rodger Merry (Interstate Brands) - In this part of the state where we have clay, struck by clays in many instances they have had groundwater in 1995 but we don't have groundwater today. Is there any attempt to address what groundwater is going to consist of as far as what the permeability may be or that these perched groundwater lenses that may encounter are not significant and don't require the protection that you would require of groundwater in more permeable.

Don Carlson - Right now we don't know how to address that but we do know that some of these perched groundwater tables basically end up as springs and they surface and some of these pollutants and contaminants that may get into the perched groundwater table can end up in a surfaced water somewhere else and cause problems. The hydrogeologic connection. So it's a hard thing to address. One of the things that some of the comments that we've heard so far is what is groundwater. If we're talking about saturated soils vs. produceable quantities that's an issue that we've received comments on and are going to try to evaluate. It's been highlighted.

Rodger Merry (Interstate Brands) - Are there a lot of similarities between the landfill the programs for that and what you're dealing with.

Don Carlson - I'm not familiar with that but I know they use impermeable. A lot of them use the impermeable synthetic liners but they put a soil "liner" over the top of it but it's primarily to protect the plastic liner from the trash and whatever you put into the landfill to compact. I'm not familiar with how they're designed. I know they have leachate collection systems. What we're talking about here with respect to the industrial process waste ones we're talking about you can visualize it as a bowl within a bowl. The top bowl is your primary liner. The bottom bowl is your secondary liner. The space in between is going to be your leak detection system that will go to a monitoring sump somewhere. The advantage to that is with an impermeable synthetic membrane liner that's exposed it's not if it's going to leak it's when it's going to leak. By having the dual liner system in this case we will (1) know when the primary liner leaks because it will be very obvious. Secondly, we haven't lost anything to the environment yet because we've had total containment with the secondary liner and the secondary liner provides the operator with the flexibility now to kind of study the situation and come up with a good game plan as opposed to total panic and having to dewater the lagoon. So he doesn't lose material and introduce it into the environment. So there's a number of advantages to this dual system. It is going to be expensive, that's the bad news. The good news is basically we've been doing this through basically consultation with the consulting and industry groups right now since 1990.

Rodger Merry (Interstate Brands) - Are the stormwater stormwater collection basins, are they going to fall into this.

Don Carlson - Depends on what the stormwater collection basin is for. A stormwater collection basin at a refinery may have to have an impermeable synthetic membrane liner. Stormwater collection basins for municipalities probably won't. Again, we've got a number of things we're looking at right now. That's a good point. We hadn't really looked at stormwater as being outside of this.

LaVene Brenden - Isn't the 1/10-inch per day just about as arbitrary as the old 1/4-inch per day or what.

Don Carlson - Well yes and no. The 1/10-inch per day basically as a part of the KSU Lagoon Study Dr. Hamm and his cohorts up there, for one of the first reports basically did a, I'll call it quick and dirty because it was a limited number of data points, they collected soil samples from all over the state that would be typical for a given area that a lagoon might be constructed in. Then they used normal compaction that permeability occurs on them and basically what they found was that you could get with normal construction practices better than 1/10-inch per day. So the issue is do we require more control and oversight on moisture compaction the size of the lifts and get a better seal through quality assurance/quality control or stick with what's being done right now for the 1/4-inch. The difference obviously is going to be the extent to which pollutants are introduced to the groundwater table. That's one of the issues. We don't think, we're not looking for extraordinary construction practices that aren't already out there. You may have to be using a spiked sheepsfoot roller as opposed to a square block one. That's primarily the difference you want to get good mixing during your compaction so you don't have a

continuous layer of compacted soil discontinuous if you mix it. The obvious question then is what benefits do we get from going 1/4-inch to 1/10-inch and the only thing right now that we can say is if everybody is interested about reducing the degree of pollutants being released to the groundwater table obviously if you can slow this down the longer design life you'll have for the lagoon system and less impact you're going to have on the groundwater resources. So that's a valid question to be asking.

Rodney Hofer - I don't know much about the KSU Study. Were these tests done on native soil or native soil treated or augmented with bentonite.

Don Carlson - As I understand it, it was on native soils. And if you're familiar with the NRCS design manuals they've got a section in there that in regard to the soils, again I'm going back five years I think was the last time I saw this, they have a table that basically breaks up soils into I think four or five groups and it's based on cive analysis, size, specific conductants and I can't remember what the other things where, but basically unless you're in sand where you can't get the compaction and the permeability of the soil is just off the scale, you can easily meet the 1/4-inch per day. So then the issue is, is it a policy issue that we go ahead and address the QA/QC during the construction practices.

Steve Swaffer - One comment that I think it's very vital that we have a definition of what groundwater is. When you go out you determine your 10 feet you're hitting a lens or your hitting an actual aquifer for your regulated entity or you're consulting engineer have got to know what that is. The second question is if a well is identified within 600 feet prior to construction does that mean that site is no longer available to use as your lagoon site.

Don Carlson - No, if it's ultimately outside. The idea of the 600 feet is we had to come up with some criteria as to how far away do we have to identify the well. 600 feet we were looking at possibly if there's borrow areas in the vicinity of the proposed lagoon system the construction equipment moving around that area, access roads back into it, whatever. We felt this was a reasonable distance that we could try to identify the presence of a water well or an oil and gas well from KCC records, those kinds of things. It's just that's an arbitrary distance, it's still fairly close to the site. We're not asking for a quarter section search, we're trying to limit the size to this thing and most of the landowners, they've had access to that property for a number of years, will know where an old abandoned water well or oil well may be that has yet to be properly plugged out. Part of our purpose here is the landowner does have the responsibility of plugging these wells out if it's an oil and gas well we can get that information to KCC and get them to assist in paying for some of the cost and assisting in plugging out those wells. Again, for the soil liners we want to make sure we try to limit the potential for vertical penetrations that can be a source or conduit for pollutants from the surface down to the groundwater table. Obviously anywhere near the dike or inside the lagoon only compounds the issue.

Steve Swaffer - Another comment that I would make is I think it would be valid by the agency in most cost effective to look at the risk to either human health or the environment as a whole based

on the usage of the groundwater formation that you would be anticipating building over. If it's a groundwater formation that is not used for a drinking water resource then is it necessary to have 1/10-inch per day or could it be kept at 1/4-inch. It's a risk based system.

Don Carlson - That's something that's been brought up. The issue there is since Kansas cannot regulate groundwater use only the appropriation for that groundwater, anybody can stick a house out and drill a private well which doesn't involve appropriation. So if they were to drill that private well what are we going to expose them to. The other thing is again since the state does not address zoning, a soybean field today may be a trailer court tomorrow. So we have those issues we're going to have look at too. How we address that is going to be a tough issue.

Steve Swaffer - Do the water manufacturers typically issue some sort of certification for the materials that they have tested their lands for or is this something that's going to be new to these manufacturers.

Don Carlson - Since 1990 typically we have asked if it's something that's not something we feel warm and fuzzy with like meat packing plant waste which is basically high strength domestic waste, if it's something in the form of metals, solvents, hydrocarbon products, we've been asking the liner manufacturers to provide a certification that their product is acceptable for use in this situation.

Rodger Merry - You were talking earlier about a question on landfills. Review and testing? I thought you meant that you were going back in once the liner's laid like they were doing on the landfills you go in and cut out sections and actually do a hard test on it.

Don Carlson - Okay you're talking about installation tests. There is a number of things. This is a part of the pre-installation, pre-construction testing protocol that we want to agree to. There are a number of ways depending upon how the liner is installed to test the seams. Some depending upon how the seams are welded, glued, whatever. You can air pressure them with a lance, monitor pressure drops. You can place a box over them, expose the surface to soap, draw a vacuum on it and if you see bubbles you know you've got a leak. There's a number of these kinds of test procedures that are non-destructive that you can do. In the liner manufacturer's, there are destructive tests that are also suggested by manufacturers. Typically a lot of these are at the start of the day where whoever is doing the seaming, welding, whatever they will take two pieces of material that's not out in the field, run a bead or whatever it is they're going to do, glue the thing, and then they will physically try to peel, shear, and also test the seam for soundness. It depends upon the liner manufacturer as to how many destructive tests per day per amount of liner installed. That's up for grabs right now. We don't have anything down as a proposal but that's a common practice.

Rodger Merry - Puncture type tests vs. chemical tests?

Don Carlson - The chemical tests are long term. Those are typically done by the manufacturer in

their labs. There is also some companies out there that I'm not familiar with and I haven't done the research on but I know they exist that are doing this work for the manufacturers. It's kind of like the UL for electrical appliances, that kind of stuff. But the physical tests that you're talking about, the shear, the peel, and the seam test are all done at the site. A lot of the manufacturers are getting away from, particularly with a liquid containment basin as opposed to a solid landfill it may make some sense to go out and physically cut out a patch and test it out there. We don't want to do that. We want to keep the number of penetrations in the liner to a minimum.

Rodger Merry - I wouldn't believe you would do that. You seam it back in and what have you got?

LaVene Brenden - I'd suggest that you pretty well define these testing protocols so that I don't have to try to guess and generate a new one each time one that Rod will approve and one that Rance will approve and stuff like that. For example, now this is the first time I've seen defined that you want a hole every acre. It's always that issue, how many holes are enough. Well, there aren't enough actually. So it would be very helpful if we who have to submit know that, but it would also be very helpful to the geotech people and the regulated community to know that cost.

Don Carlson - The big issue here, and you'll appreciate this, is I figured I'd be getting a lot of comments from the consultants in that they, since they're doing the design for the installation of this liner and they're putting their stamp on it as opposed to the liner manufacturer, who's that's their product and they probably know it the best and how it ought to be handled, who basically would control here. Should it be the liner manufacturers design on the installation practices and let the engineer do the other part of the work and who's responsible for certifying that it's done properly. Personally I have some heartburn if we have the liner manufacturers agreeing to be responsible for the installation and the certification as kind of the fox watching the hen house.

Steve Swaffer - Will there be any standard protocol or guidelines as to what will dictate a monitoring well system to be installed?

Don Carlson - I think we will leave that up to the designer. We have standard monitoring wells right now, our water well group has a couple standard designs and I think they were developed in conjunction with our Bureau of Environmental Remediation. It depends upon whether we're talking about floaters, sinkers, or are we looking at organics vs. metals and salts. It makes a big difference. So it's going to be site specific. It's going to be dependent upon what it is we're trying to monitor and look at. That's why whoever is going to do the design. Right now we're not requiring the monitoring wells. It's if we determine that they are needed. With a dual liner system I don't think it's going to be needed because we've got this leak detection system and we've got the secondary containment. With a single liner system or a soil liner system monitoring wells may be an issue.

Rodger Merry - When you're talking about the lagoons that you establish are going to be grandfathered. Can we go in and do a clean out on them. Are they going to come back up or

reissue or fall into a liner category.

Don Carlson - As long as the lagoon is operated in a manner as it was originally designed until or unless we find out there is pollution the idea is it would be grandfathered in. Now if you're talking about some type of lagoon system that is periodically clam shelled out and there's no guarantee that the liner remains in tact that's a whole different issue that we'd have to go back and revisit.

Rodger Merry - I'm thinking about all these little cities around that's got multiple lagoon systems and they try and stage through a clean out here.

Don Carlson - Rod knows how most of them clean out the lagoon systems.

Rod Geisler - Some people disagree with me on how large a threat is created by cleaning.

Don Carlson - If we're talking about simply stirring the contents up, pumping them out, irrigating or taking a mud cat, mud cats I don't think do that much damage to a soil liner. Again, if we're talking about somebody with a small bobcat when the thing is dried going down there and scrapping the thing off or a clam shale from the bank dragging it across the bottom I'd get a little excited about that. Particularly if, obviously if we have a natural soil liner and it's 40 feet thick of natural soils I'm not going to worry about it. If it's a foot and a half thick over river sand yeah I have a problem. So it's going to be site specific I think.

Rodger Merry - So you're going to have some point made on it.

Don Carlson - Well the grandfathering was simply to address that probably those lagoon systems that are in existence and operating on the date that these regulations are adopted are grandfathered in. Everybody else has to comply with the new standards. An existing one wouldn't have to go back and do anything unless we have knowledge of or suspect that pollution is occurring. Public health threat or environmental pollution is occurring.

Steve Swaffer - Is your expectation on a year from now we'll have these regs in place?

Don Carlson - As the chart showed you up there, if I had them done ready today it would take 16 to 25 weeks minimum. Our last public meeting that we have scheduled right now is April 23rd and the Secretary has indicated that he would like to see these out by the end of the year. We will certainly try to make that effort. We don't know right now based upon the comments that we're receiving what we're going to run into from the standpoint of technical issues and how much detail that we're going to get into. I would like to try to keep the regs basically as simple as we can with some pass/fail criteria and not get into how wide the seam has to be for seaming a lagoon. To me, that's between the design engineer and liner manufacturer. So, hopefully if we get into a lot of these issues I see the technical issues like LaVene brought up as to what is an acceptable test and whether or not we have to sit there a list those, that's going to take quite a bit

of technical work and consultation with various engineering groups. Policy issues such as what is groundwater, I don't know how long it would take to run those kinds of tracks because that has implications not only for our agency but once they start to be used how other agencies like DWR would impact it. Consistency issue, we are the state so DWR says you still need an appropriation right for water that we're saying isn't groundwater.

Martin McClelland - Do you have existing regulations to rectify any of these hot spots. Anything that impacts groundwater.

Don Carlson - In theory we do, yes.

Martin McClelland - Why would you have to have a whole new set of regulations for innumerable people other than to keep these people in business and putting the burden on municipal people. I'm thinking a large number would be municipal lagoons.

Don Carlson - First of all we're only talking about new lagoons. We're not talking about retrofitting existing lagoons.

Martin McClelland - Right. I'm thinking of a lagoon very close to my house that's probably 30 years old, it's probably ready to be retrofitted in some way in a fashion that will be in this.

Don Carlson - But the retrofit for your lagoon could possibly be, if something has to be done the replacement of the soil liner if it's damaged. If it's not damaged cleaning out the lagoon wouldn't require a retrofit.

Martin McClelland - Unless you're structurally changing it.

Don Carlson - If you're going to modify it, you're going to reduce the size, increase the size, if you're going to add a brand new cell then the intent would be that new cell would have to meet these requirements, not all the ones that are there.

Martin McClelland - If that's defined as not being a hot spot or being an impact then the new cell would be significantly more expensive than with the old style.

Don Carlson - That's where we're saying we don't think it is. It will be. We're not looking for a new construction practice out there. We think if the contractor is adequately monitoring moisture content, choosing the right soils for the use of the soil liner, not exceeding a 6" lift, using the right sheeps foot roller that those are normal construction practices that shouldn't run up the cost. Now there will be an increase in costs because the proposals that we're talking about is having somebody oversee as an inspector for the construction project, that obviously may require some sampling, but there has been a lot of technology increase in neutron density meters for compaction, moisture content, those kind of things that can make this, yes there's going to be a cost, but it's not like we're requiring everybody to put in a double synthetic plastic liner right

now. It's not going to be in that magnitude.

Rodney Hofer - Correct me if I'm wrong but aren't all projects that are funded through the revolving loan fund have to be inspected. How is this different.

Don Carlson - There are a lot of projects that don't use the state revolving loan fund.

Rodney Hofer - Particularly the commercial or industrial.

Don Carlson - Yes. The other thing is there are regulations that address inspection but what we're talking about is, again, defining the construction and monitoring program as a part of the project so it makes a little bit of a difference if we're talking about a soil base with a single impermeable synthetic membrane liner vs. a soil liner system. You're going to be just as worried about compaction for stability of the bank, embankments and that kind of stuff. But for the soil liner you're looking also at getting the compaction and permeability to control the permeability as well as the structural integrity of the embankments and those kind of things. It's just a slight difference.

Unidentified Individual - If you start getting some cattails around and start having muskrats show up you're in a different category.

Don Carlson - You'd have a problem.

LaVene Brenden - Interesting comment. You going to include wetlands under this, construction wetlands?

Don Carlson - Right now these are lagoon systems.

LaVene Brenden - I understand.

Don Carlson - We have no plans to address wetlands. I don't see glazed eyes yet.

LaVene Brenden - I don't envy you your task.

Don Carlson - The impossible just takes a little longer.

Rodger Merry - Does the EPA give you a standard to work off of?

Don Carlson - No. EPA typically does not, on the wastewater side, does not deal with design standards or requirements. Basically what they will come up with is for an industry a set of effluent guideline standards or effluent limits they would have to meet and they're basically production based. You produce so many widgets you allowed to discharge so many pounds of pollutants. For municipalities they came up with a nationwide definition as to what the treatment

requirement was, and that's secondary treatment. But they didn't get into how you do it. It's just performance based.

LaVene Brenden - You said the second set of standards/regulations are going to come out in respect to ag facilities.

Don Carlson - There will be a separate set of regulations that John Harsch and the livestock waste management program will be developing.

LaVene Brenden - Then they haven't started this process yet.

Don Carlson - We have had some meetings, Secretary Bremby has had some meetings with the ag industry. John Harsch is scheduling meetings with various groups at this time. I can't tell you exactly who and when and where, but you can give him a call.

Rodger Merry - Does any the TMDLs testimony over Kansas have any of that bear on decisions to go after lagoons?

Don Carlson - No. None at all. Looks like everybody's eyes are starting to glaze now. If you think of something after this meeting, feel free to give us a call, drop us a note, whatever. We will be accepting comments up to April 28. Again, our last meeting will be in Wichita I think on the evening of the 23rd. So if you think of something between now and then feel free to drop us a line. We appreciate you participating in the meeting and hope to see you at the hearings and future meetings as we get further down the line developing these regulations. With that I'll close the meeting and everybody can go home. Thank you.

Proposed Lagoon Liner Regulations
Public Hearing - Topeka, KS
April 16, 2003

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Pre-Regulation Public Meeting
Hays, Kansas
April 22, 2003

Don Carlson - I'd like to welcome you folks for at least coming out. I'm going to try to make this real brief. I have a real long introductory speech for a bigger crowd as to how we'll conduct it, but we'll just kind of wing it tonight. I've got two presentations I was going to give you. One deals with how state agencies adopt regulations. The other one basically were the concepts and issues and ideas that we were putting out. Basically trying to solicit input from the public and get them to think as to what they want to see in regulations and don't want to see in regulations. I'll go through that if you folks haven't had a chance to look at the information on our website. Secretary Bremby has basically decided and he published an op ed piece I think it was in February or March that he wants to make groundwater protection a high priority in his tenure as secretary of KDHE. Particularly this was a result of a lot of comments that he had received regarding groundwater issues and groundwater protection issues. A lot of it directed at the Equus Beds Aquifer in the Reno, Sedgwick, McPherson county area and as a result of that he's basically directed staff to come up with a series of policies, regulations to provide better protection for groundwater resources in the state. That's what we're doing. There's a number of projects going on. I'm responsible for looking at what we can do to address municipal, commercial, and industrial wastewater lagoon systems and what can be done to enhance protection of groundwater from those systems. There will be a separate set of regulations being developed by our livestock waste management unit that will deal only with livestock facilities. We have one set of regulations that are currently in the mill being processed right now. I think they're being adopted as temporary regs and this is to address brine ponds at underground storage operations. This is one aspect of a number of potential groundwater contamination sources that are being addressed. My specific responsibility is municipal, commercial, and industrial wastewater lagoon liners. What I'll do first of all is see if we can get this light box fired up and I'll give you a quick overview. How many of you folks are familiar with how state agencies adopt regulations? Unique. A lot of people believe a lot of these regulations can be developed overnight and what I was going to point out is the process is not quick and it's not friendly from a regulator's standpoint. It is intentionally made that way for a purpose. The thing I'm trying to impress upon people during this process is 1) there are multiple times if you have an interest in these regulations that you can participate in the regulations and that, again, it's one of these processes that is not quick and it's done intentionally. What we started off doing is all state agencies are required by statutes and regulations to follow a specific process when they adopt regulations and this is to ensure that the public, the regulated community, interested people have a chance to provide comment and input into this process. That's basically what we're looking at below the line. It can take anywhere from 16 to 25 weeks if I have everything ready to go today. So it's not a quick process. What we do at KDHE is we go above and beyond that. What we do is a number of steps before we even get to the mandatory requirements that the legislature intended for us to address. We kind of call that the pre-reg process. We're going to look at a number of

items and I'll go through these fairly quick. But the bottom line is after we go through these items then we come down here to this item and that's again where we start the formal regulation adoption process which most agencies go ahead and employ. The first thing we try to do is we try to identify if we think there's a need for developing regulations or to address a problem through regulations the first thing KDHE staff does is try to identify concepts and issues that need to be addressed. What are the things where we need to look at. What are the problems we're trying to solve. We identify based on those concepts and issues do we need to modify existing regulations or do we need to create new regulations. At the same time we're doing that we have to determine whether or not there is a need for statutory authority to do what we're doing. If we already have the authority that's no problem. If we go into a brand new area where the agency doesn't have specific statutory authority to address regulations then we have to go before the legislature, they have to pass the statute to grant us authorization to go and develop regs for that specific activity. In this case based on what we're looking at right now we don't think we need any statutory changes. But that may change depending upon comments we receive and what people want to see and don't want to see. What we do then after we identify ideas, concepts and regulations that we think may need to be addressed is to do what we're doing tonight. We're basically going out and providing public outreach. We are looking to solicit input from people such as the regulated communities, trade organizations, the general public. We do this through a number of things, public meetings like tonight, publications in the Kansas Register, through newspapers soliciting requests for input regarding issues, concerns that people may have and want to provide us and through the public notice process. After we conclude these public meetings and get the input from the people, and by the way tomorrow night is the last one of these public meetings in Wichita tomorrow evening, we'll sit down and we will compile all the comments we received via the mail, public notices, the comments we've picked up at other public meetings and we will evaluate and summarize what recommendations that's been provided the agency as to what people want to see and do not want to see in the regulations. Staff will then take those initial concepts, issues and concerns, take the input that we received, evaluate what needs to be done and basically prepare a set of draft regulations if that's where we're going to end up. The draft regulations then will be submitted in house at KDHE. The regulations will undergo an internal review for technical considerations, the lawyers will look at it from a legal standpoint and then our management staff will ultimately look at it from the standpoint of policy and management issues that need to be addressed. At the same time the regulations are being drafted I have to create another document that goes along with it. It's called a regulatory impact statement. Most state agencies only have to do two of the three items listed up there. Since these are environmental regulations we have a third item that we're responsible for. The regulatory impact statement is basically to address and summarize what the regulatory impact will have on whatever the issue is we're trying to address. We have to provide a summary as to what environmental impacts or benefits will be provided as a result of these regulations and then we have to provide a fiscal impact analysis not only as to how it's going to impact the regulated community but also how it's going to impact fiscally state agencies or other organizations that may be involved. Once we go ahead and develop the reg package and the regulatory impact statement we submit it to the secretary. The secretary evaluates it and determines if he wants to go ahead and pursue the development of these in the formal regulatory

process. Once he gives us the green light to go ahead, we go ahead and now begin entering what I call the formal state regulatory process. Everything up to this point in time has been outside of the mandatory requirements for our agency. The mandatory requirements that our agency has to address are basically nine different steps and I'll go through each one of them. Again, the point I'm trying to make here is the mandatory process by itself will take anywhere from 16 to 25 weeks. It's not quick. So it's not going to be we're going to go home, develop regs and a week later adopt them. The first thing we do is we submit the regulations to the Department of Administration. The Department of Administration you can think of as your grammar teacher back in high school. They rip them apart, grammar and spelling, function and format. We play post office box bingo until we satisfy them as to the content then they sign off on it. At that point in time we then walk them over to the Attorney General's office. The Attorney General's staff review the regulations to make sure that they're legal and the state can actually enforce them. If they want us to make any changes I have to make the changes to satisfy the Attorney General and I then have to walk the changes back through the Department of Administration so they bless it. At some point in time we have a concurrence by the Department of Administration, the Attorney General's Office and KDHE. At that time we submit a notice to the Kansas Register. That's the same as the Federal Register except it's the state level. That is the document that formally notifies the public as to an agency's intent to adopt regulations. There is a 61 day notice period during which the public can submit written comments regarding the draft regulations, the regulatory impact statement, so this is one of your opportunities, besides today, to provide input to the agency. During the 61 day process we then have to go before the Joint Committee on Administrative Rules and Regulations, this is members of the Senate and the House, the legislature. We receive input from them as to what they like or don't like about the regulations and their recommendations as to what they want us to do about it. At the end of the 61 day public notice period the agency is required to hold at least one hearing and on regulations where we have a lot of public interest we'll hold more than one hearing. So again, this is the second process if you missed the first 61 public notice period you can participate and provide input regarding the draft regulations, the proposed regulations. After we receive the input from the public hearings we can go ahead and evaluate what the recommendations are. If we feel changes need to be made we make those changes, we run them back through the Department of Administration, the Attorney General's Office, and at some point in time as soon as they sign off on them the Secretary then agrees to adopt them. He then sends a notice back to the Kansas Register publishing what the adopted regulations are and 15 days after that the regulations take effect. So that's basically the reg adoption process, and again there's multiple avenues in which the public, the regulated community can take a shot at providing comments to the agency regarding what they like and don't like about the regulations.

The second part of the presentation here is basically why we're here tonight. Again, my function is basically to evaluate and address potential regulations for municipal, commercial, and industrial wastewater lagoon liners, lagoon systems primarily the liners. Again, there are a number of other regulatory projects that will address livestock waste, brine ponds at underground storage facilities, those kind of things, other contamination sources. One of the things that we try to do is instead of just coming out to a public meeting and say we're going to develop some

regulations, what is it you want to see, what is it you don't want to see, we decided to put together this list of concepts and issues so that we can basically prime the pump. Get the public to think about what we're going to look at. Hopefully they would generate some comments, generate some ideas and help the process. An overview, real quick as to what we're going to be looking at and I'll detail this a little bit later, one is we're going to target sensitive groundwater areas. We're primarily looking for shallow groundwater, how we're going to protect that. Unique groundwater resources such as the Equus Beds. We're looking at tightening up our current soil liner requirements. We're looking at creating a set of regulations for impermeable synthetic membrane liners. We're trying to establish minimum requirements for several types of lagoon systems, again municipal, commercial, and industrial lagoons. For the municipal and commercial that are primarily domestic waste, we're looking at being able to use either a soil or a single membrane liner system. For the industrial lagoon systems we're looking at a multi-tiered approach depending upon what type of waste the industrial lagoon will be containing and I'll get into that a little later. We're looking at requiring enhanced hydrogeologic information as a part of the engineering report design process. Again for the hydrogeologic we're looking at specific soils information and groundwater information. We're going to propose developing a specific set of design standards to specifically address synthetic membrane liners. Right now we do not have design standards that address that. We've been operating since 90 under a guidance. It's not really enforceable so we want to go ahead and formalize it in regulations. We want to establish some type of quality assurance/quality control. If in fact we're going to tighten things up we want to make sure whatever we put in the ground actually meets the requirements. So we're looking at construction and post-construction monitoring and testing certification requirements. And last but not least, at some point in time the useful life of that lagoon or the operator is going to decide he doesn't need to use a lagoon anymore, we're looking at developing some closure requirements.

Getting into the details. One of the things we're tossing out on the table we want input on is looking at reducing the permeability rate from 1/4 inch/day to 1/10 inch/day for soil liners. We're looking at if you're going to construct a new lagoon system, if you're going to choose an area where groundwater separation between the bottom of the pond and the top of the groundwater table is less than 10 feet, then the new lagoon is going to be prohibited. Lagoons over the Equus Beds automatically impermeable synthetic membrane liner. No soil liners. Again, we want to have input as to what the people think about that. Existing lagoons, if they're existing we're not going to bother people unless the lagoons pose either an environmental or public health threat then we'll have to go back and relook at that. For the industrial lagoon systems, we're going to come up with a tiered approach. Basically what we're going to do is for those industries that are directing domestic wastewater only to the lagoon systems we're going to treat them the same as we would a municipal or commercial facility. There are a number of industrial operations that generate relatively low pollution potential waste streams. An example of this would be non-contact cooling water. Quarry operations that wash gravel, the rock dust that comes off of the gravel washing operations, we believe that these types of waste represent a relatively low pollution potential so we're going to offer them either the use of a soil liner or if they can't meet the permeability rate a single membrane liner just like a municipality. The vast

majority of the industrial operations that have what everybody would consider to be process waste such as solvents, hydrocarbon products, heavy metals, organic chemicals, what we're going to be looking at there is a double synthetic membrane liner system. Soil liners, again we're going to allow them for domestic waste and low pollution potential. If they can't meet the 1/10 inch/day they will have to, just like for a city, they will have to install a synthetic impermeable membrane liner system. For the industries that have process wastewater what we're basically looking at is a dual liner system with a primary and secondary liner, an intermediate space that will provide leak detection and the capability of dewatering that intermediate space between the two liners. We're looking at establishing a pass/fail criteria for the primary liner of 1/64 inch/day. The hydrogeologic information we're looking at right now basically we're looking at trying to establish some minimum requirements. What's going to be needed to be submitted to KDHE for review. One of the things we're looking at is requiring borings or excavations a minimum of 10 feet below the proposed pond bottom. Again this is to collect soil information as to what soils may be used for soil liner systems and to confirm whether or not groundwater exists. A minimum of one boring per surface acre of lagoon system. We're going to require logging of the soils to confirm whether or not groundwater exists. While we're doing the borings or the trenching we'll collect soil samples. If we're going to be using natural soils on site for a proposed liner material to obtain information regarding classification, compaction, permeability, those kind of design parameters. We're looking at having some type of formal hydrogeologic report or the data summarized and if we run into a site that we have some serious questions about we want to have the capability of being on site when the hydrogeologic work is done so that we can personally witness the work as it's being conducted and the conditions that exist at that site. For the soil liner designs we're looking at requiring the submission of the hydrogeologic information. This would include all the soil testing data, the calculations used in designing the soil liner system, and basically all the information submitted as part of the design package. We're looking at for a soil liner system a minimum of one foot thick soil liner be provided. Again, we talked about the quality assurance/quality control practices during construction and post construction testing. We're looking at requiring the development and submission of a soil liner post construction testing protocol. We want to establish this early before construction actually starts as a part of the design so that everybody agrees on the test procedure and the pass/fail criteria that's going to be used. We're looking at requiring that the post construction quality be certified by a licensed professional engineer and the certification will certify that the construction was conducted per KDHE approved plans and specifications. This will obviously require monitoring during construction and following construction. For the impermeable synthetic membrane liner system we're looking at establishing a complete set of new design standards. Liner thickness, we're looking at a minimum thickness of 30 mils, that's 30/1000 inch. We also, because of the proprietary nature of the formulations being used in the development and manufacture of these liners, we want to get a certification from the liner manufacturer that the wastes that are proposed to be placed in these plastic liners are compatible with their product. They're really the only ones that know what their formulations are, what the compatibility is, particularly if this is a non-domestic type waste. We're looking at establishing criteria for bank compaction requirements. Again, this is to provide adequate stability so we don't have stresses occur on the plastic liner system and one of the things that we're looking for

input both from liner manufacturers and from the consulting firms is right now we're basically proposing or throwing out on the table for consideration that the liner be installed per the manufacturer's requirements. Most liner manufacturers specify how the liners are to be installed. We're interested because basically the design is going to be based upon the engineer's PE stamp not the liner manufacturer's stamp so this is the input we want to receive both from the liner manufacturers and from the consulting industry. One of the things we want to develop is early in the game the development of a seam testing protocol. What that pass/fail requirement is going to be. We want to have provisions that address that the design conforms to other KDHE minimum standards of design that we have on the books and we want to require that if there's going to be any hydrogeologic work done at the site. If it's a site we are concerned with for whatever reasons that we have the ability to be notified prior to that work being done in case we want to witness it. Municipal lagoons, commercial lagoons, and industrial lagoons that have domestic waste only, we're looking at employing only a single impermeable synthetic membrane liner. Industrial lagoons that have process wastewater, we're looking at the dual liner system with an intermediate leak detection system and that the intermediate space between the two liners have the capability of being able to be dewatered. Industrial lagoons, we're looking at requiring a minimum of two cells. The reason for this is if a synthetic liner leaks and it's going to be when not if, it provides a little bit of possible operational control to help with the dewatering so that repairs can be made. We're looking at providing at least two foot of insitu or compacted soil beneath the secondary liner. This is basically for structural purposes and protection of the secondary liner. It doesn't have anything to do with cutting down leakage, seepage, protecting the groundwater. It's strictly a structural issue. Impermeable synthetic membrane liner post construction testing, again we want to have the designer develop and submit to us a synthetic membrane liner post construction testing protocol so we can agree to the testing protocol and the pass/fail criteria. Again, we're looking at requiring a post construction certification by a licensed professional engineer that the liner was installed consistent with the approved plans and specifications by KDHE. This is going to require monitoring of the construction and installation of the liner. Again, if one of the test procedures is going to be some type of a whole pond leak test we want to be notified so that we can witness this test. Our minimum standards of design, there's going to have to be something in their because the primary intent of these regulations is to enhance the design and leak control from lagoon systems. There are a number of other issues where there are either existing design standards, federal regulations or state regulations that also deal with the design of lagoon systems so we need to provide some type of recognition that in addition to the regulations that we're looking at right here the regulations will also have to comply with these other provisions. One of the things that we're looking at specifically for soil liner systems and ponds, basically we're trying to identify the potential for any vertical penetrations that we may run into. Typically what we're looking at are abandoned oil, water and gas wells. What we're looking at is having some type of provisions similar to what's in the current CAFO lagoons that if you know there is an abandoned well within 600 feet of the site that the identification of that abandoned well will be noted on the plans and specifications so we can make sure the well gets appropriately plugged. If we believe there's a well out there then we want to have some type of warning put on the plans and specifications and if during construction practices one of these unknown wells or unidentified wells is identified during construction practices, that basically construction around

the area ceases. Not all construction, but the construction around the immediate area of the well ceases until we can evaluate what the situation is and make a determination as to how we can plug out the well and if the site can continue to be used for the intended purpose. Monitoring wells, we're looking at putting in provisions that enable KDHE to require the installation of monitoring wells when we believe it's necessary. We're looking at having the flexibility that there may be other technologies out there in lieu of monitoring wells to determine pond leakage, groundwater contamination. We want to have the flexibility to be able to evaluate and use those technologies and we also want to have basically KDHE buy off of any groundwater or monitoring well system design prior to it being installed. Plan and specification approval. One of the things we're looking at is some how trying to impress upon the designer and the operator that what we're putting in regulations here are minimum requirements. Regardless of whether the facility is being designed to meet these minimum requirements or not is the designer's obligation and the operator's responsibility to design and operate the facility in a manner that does not pollute the environment or to impact public health adversely. Put in a provisions, obviously, that any deviation from plans and specifications approved by us basically the deviation has to be reviewed and receive our approval prior to the construction being implemented. Getting to the closure requirements. At some point in time the wastewater lagoons no longer going to be needed. The company's going to go out of business. We need to close out the lagoon to prevent it from becoming a future pollution source or say the useful life of the lagoon has been exceeded and basically it's going to be replaced with some other type of treatment system. Basically what we're looking at is proposing notification requirements in the form of regulations that we have to be notified when a lagoon is going to cease being used. Until we approve the final closure of the lagoon system it's going to be required to maintain a valid water pollution control permit from us. We want for new facilities as a part of the design, we want to have developed a closure plan and at any point in time if an existing system is modified or expanded basically develop a closure plan at that time for the whole system. The regulations will need to develop what's going to be expected as a part of the contents for the closure plan and when does the closure plan periodically need to be updated or basically replaced. One of the other big things we're tossing out is establishing a time frame once KDHE approves the closure plan that there is a time frame that establishes the maximum amount of time for an operator to complete the actual closure so that it doesn't drag on for 5, 6, or 7 years. It's in perpetual closure. And then last but not least, some type of regulation that addresses a variance provision that addresses all the conditions that we couldn't think of. It gives us the ability to provide designers, operators if they find a better way to skin the cat that we can consider those options and approve them as being sound and viable. With that, that's the end of my dog and pony show. You came in late did you sign up that you wanted to say anything? Do you have a formal presentation?

Unidentified Individual - I didn't want to be noticed.

Don Carlson - Sorry. What we did as I indicated to the gentlemen before you, we had a meeting in Topeka that was lightly attended. I think you tied them. We had a very informal discussion. If you've got some comments that you'd like to make I'll try to get as close to you guys that I can

so the microphone can pick it up. We're recording this right now so that we can take it back to Topeka if I happen to miss something or Dorothy misses something back there that's being said hopefully it's on the tape and we can identify who said it. If we need clarification we can get back to you, that's part of the reason for the sign in sheets. If people were going to submit some data to us or some information or reference some source and we couldn't find it we always use the sign in sheets to try to contact them to track down that information. With that I'll open the floor to comments, suggestions.

Unidentified Individual - I was curious about what your thoughts are in closing lagoons and how you're going to establish that you're finished cleaning the lagoon out. What's the acceptable test, like a background test. I've had some experience with CAFO regs your familiar with and although there's nothing specific in saying when we get down to identify what is acceptable closure. So we've been assuming background tests, a certain percent of background tests and that may not be good because 200% of .001 isn't very much. Do you have some thoughts on that?

Don Carlson - Right now we haven't really got, again these are just ideas we were tossing out, we haven't gotten into the details. Right now in closing out industrial lagoons our Bureau of Environmental Remediation basically has come up with a set of procedures after we, the Bureau of Water, get everything out, the liquids and the solids out of the ponds, there is a soil testing protocol that's based upon x number of samples based on the surface area of the pond. The number of samples I think are composited and depending upon obviously if you're dealing with solvents that's one thing, salts, that's another thing, heavy metals. Some of this stuff moves through readily, it doesn't tie up in the soils. A lot of the metals tie up in the soils, shallow. The VOCs tie and move through, so it varies. Right now what my understanding, and I'm not an expert in this, the Bureau of Environmental Remediation has developed I think some risk based criteria depending upon what the pollutant is. There is a number of clean up criteria based on whether it's a groundwater pathway or a soil pathway as to what they're concerned about and I can't really explain it in any more detail than that. In lieu of us developing regulations we would probably continue to use those. That same criteria is being used by them at superfund clean up sites, at solid waste clean up sites, leaking underground storage tanks, those kind of things. So right now we're basically using their criteria and their guidance on the actual physical clean up of the soils after we remove all the liquids and the sludges and dispose of them properly from the lagoon systems.

Unidentified Individual - Did I understand you on municipal and commercial, new municipal and commercial lagoons there had to be a 10 foot separation. Would there be any option if it's less than 10 foot putting in a liner?

Don Carlson - That's one of the comments that we're willing to entertain. Right now we're just basically saying that based on some of the information that we've looked at groundwater protection can obviously be enhanced by the more separation you can get between the bottom of the lagoon and the groundwater table because the stuff ties up in the soils as opposed to getting

down to the groundwater. There is the big variance process at the end. Right now what we threw out on the table and we want people's comments on, we're basically saying if you find a spot that's less than 10 feet, the answer is no.

Unidentified Individual - I can think of one county right now that's looking at the possible I guess a municipal lagoon at a county park and I would think it's definitely less than 10 feet.

Don Carlson - The other thing they can look at is an above ground lagoon. Pump it up.

Unidentified Individual - It's probably going to have to be pumped up anyway now to make sure it's out of the flood plain.

Don Carlson - But that's one option to get the 10 foot of separation. If you can't get that right now if somebody wants to propose say a synthetic membrane liner one of the trade offs would be maybe what we'd look at is a dual liner, like an industry. The intent with the impermeable synthetic membrane liners for municipal, commercial, the industries that handle only domestic waste and the low pollution potential industrial waste was that if they had to put in a plastic liner we were willing to go with a single synthetic membrane liner because we think that they represent a very small, in comparison to the industry's pollution potential. But that's why we threw it out on the table that if it's less than 10 feet basically the new site's unacceptable. The variance process would be in there and as is being done right now the designer could submit a proposal detailing a mechanism to handle it and why that mechanism basically provides adequate protection for our review and consideration. But we're not really proposing a mechanism right now that says if you put in a single synthetic membrane liner you can have it less than 10 feet. But again that's something we're looking at input on. If people think that ought to be a consideration we'll be glad to go back and take a look at it.

Unidentified Individual - I could think of another site I'm putting together a proposal on right now where a community is looking at maybe going to a lagoon system to replace their mechanical plant and the mechanical plant is right behind a levy. So if there's water up against that levy then groundwater could.

Don Carlson - You need to be, if it's a municipal lagoon system, you need to be talking with Rod Geisler who is my counterpart on the municipal side. He's the Chief of the Municipal Programs Section. Because our current minimum standards of design have the 10 foot separation distance requirement. The nuance here is we're just flat saying no. So if you've got a couple projects in the bull pen warming up like that you ought to touch base with him early and make sure that everybody's in agreement.

Unidentified Individual - On these synthetic liners would those go over the whole bottom of the lagoon or only to the top of the berms? How are those

Don Carlson - The synthetic liners would basically, the ones that I'm familiar with and the ones

we're looking at right now, basically go tie into the dike top and basically side slopes and complete bottom.

Unidentified Individual - You mentioned seam testing protocol. Is that something that you will basically develop the criteria for that.

Don Carlson - No. Basically a lot of the liner manufacturers, it's going to depend upon how they install the liner. You can heat weld them, you can solvent weld and glue them. That's correct. What we want to agree on though is if you're going to use a lance test in the seam cause you can lap it over and there's a space in between that you can pressure up. We want to agree as to how the test is going to be conducted. How much pressure drop there's going to be. Those kinds of things.

Unidentified Individual - You just want to prove its acceptable.

Don Carlson - Right. The other thing is there's a number of tests that use vacuum where you basically put soap over the top of the liner, put a box on it, draw a vacuum on it and if you've got a hole anywhere near it draws air from the bottom of the liner up. Makes a bubble. Obviously if it makes a bubble you want to plug that hole. That one is a pass/fail. You know we don't say how big the bubble has to be.

Unidentified Individual - Electronic see if I can get the term ... with electronic leak detection method?

Don Carlson - Resistivity?

Unidentified Individual - Yeah that methodology.

Don Carlson - I know it exists. What information I know about it, it spots holes that are very, very small. In my way of thinking that's going to be more, if you want to use it, that's going to be more for a whole pond liner type test. What we're talking about is having 100% of the seams tested as they're welded. Through whatever one of these tests and typically that test is not really used for that purpose. Basically that test that I'm familiar with that you're talking about is you have a relatively small water depth in the pond, you induce a current and however the black box is you can spot, you can pin point where the hole is roughly. It shows up.

Unidentified Individual - How familiar are you, some may argue that it may be a more comprehensive test than doing all the individual tests.

Don Carlson - I don't know what the sensitivity of that is with respect to the seams. That's the only problem.

Unidentified Individual - So the seam could be struck later or something?

Don Carlson - Oh yeah, that's a good test for post installation type testing, looking for a hole. That's about the only way you can do it.

Unidentified Individual - Are they looking at these regulations to be statewide?

Don Carlson - That's part of the thing we tossed out. We've had a number of comments basically some of the comments have been directed at a question as to why we need the 1/10 inch statewide. Why don't we concentrate the 1/10 inch on shallow groundwater areas. Obviously an earthen pond out in the flint hills where there's no groundwater doesn't need the 1/10 inch. That's been some of the type of comments we've received. Wanting us to look at the boutique term now is risk based criteria. Rather than just saying a 1/10 inch statewide. If people are looking at that I've asked them to come up with a risk based approach that they think is reasonable. One thing we could look at is the Kansas Corporation Commission has established sensitive groundwater areas for the oil and gas industry so when they have a drill pit out there that's areas that are already identified where plastic liners have to be employed for the drill pits. If you look at the areas that they've designated and they've got a very detailed map in their, I'll call it a program management book I think it's a copy of the regs and statutes, there is a section by section or even quarter section for the whole state as to what these areas are and if you look at a map that they've delineated these areas basically if you take all of the major rivers, major stream segments, anywhere there's an alluvial aquifer that's basically the areas they've targeted as groundwater sensitive areas. It just so happens, and I can't explain why, but I think all of the Equus Beds area has been targeted by them. That's another option we could look at.

Unidentified Individual - I always hear about one size fits all so I think I like the plan of targeting more sensitive areas rather than have it one size fits all. I'm Representative Dan Johnson. That's one of the things that we always hear, one size does not fit all. Why should we where it is 500 ft. to water met the same requirements for 50 ft. to water?

Don Carlson - The only justification I can throw out and part of the reason why we through out the 1/10 inch just to get comments on this, was when the livestock industry, Seaboard hit and the Governor asked K-State, Dr. Hamm and his crew to look at the soils, one of the very first reports they did basically is a very limited number of data points. They went across the state, took a bunch of samples, and took them back to the lab and basically it was soils at a given area that would be used for liners. That's the best way I can explain it. They went back and did the soil testing on it to find out what the soils could be compacted to, what the leakage rate would be and their analysis at that time, and it was primarily to determine whether or not we were justified with 1/4 inch/day, they basically came back and said based on the normal soils that would be used for lagoon systems statewide, and I think there's 8 or 9 samples from one end of the state to the other, that with normal construction practices if the moisture and the compaction were adequately controlled 1/10 inch is very doable with conventional equipment. So that was the basis and the genesis for this 1/10 inch. The obvious question can be made then is what benefits are we going to gain from going to 1/4 to 1/10. Should the 1/10 be used statewide just because we can get it? We don't, right now, part of the in put we're seeking from the consultants is

whether our assumption and basically the original, what I call the quick and dirty study by K-State, whether conventional, normal construction practices, if it just requires a little bit more oversight on moisture control and compaction, if it's doable then the question is should we require it? If it's something that's going to cost us more money then the question ought to be what are we going to gain by it and is it worth it and is it worth it for statewide as opposed to target groundwater sensitive areas? That's the kind of comments we're looking for. If anybody wants to offer a risk based approach we're willing to look at it.

Mike Hawkins - As I understand you to say that Hamm Study indicated that the lagoons that he reviewed soils met the 1/10 inch seepage rate. (can't hear the remainder of the comment.)

Don Carlson - No, it wasn't the lagoons he studied. Well what he did was early in the game with Seaboard the whole question was KDHE's livestock design standards adequate? And basically before they got into I call all the research part of the livestock lagoon work that they did they decided to go around and do some very basic information. One thing is they looked at some of the other states, what they were requiring and then they tried to look at it from a statewide aspect. They may have collected some soil samples out around Liberal, some up around Atchison, Kansas, Salina wherever. They collected what they felt was I think 8 or 9 sites that was representative of the various soils that we run across in the state and I think what they were looking at was the NRCS in their design standards for livestock lagoon systems they had a table, if my memory serves me and this goes back 5-6 years, they had a table with 5 or 6 categories of soil and basically with the exception of if it was just pure sand which couldn't meet anything, all of the other soils could meet the 1/4 inch/day easy, anywhere. And this was basically I think nationwide for the NRCS. Hamm and his group I think were trying to compare, prove that the typical Kansas soils that we would run into whether or not that was realistic and their findings were basically you could meet the 1/4 inch/day if you compact it and design it right and control the moisture. So that basically answered the big question was the 1/4 inch adequate or was it doable.

Mike Hawkins - Most soils will have a little clay to meet the 1/4-inch but to meet the 1/10-inch will be quite a bit different story. I don't think you have the same general finding that lagoons could be built.

Don Carlson - That's what we're seeking input on here. Basically what we're looking at is part of the deal with the soils that could meet a 1/4 inch if you compact them and make the liner thick enough you can always get to the 1/10. Now the obvious questions are what's it going to cost and what are we going to gain by doing it and should we be using this kind of soil liner only for extreme groundwater protection as opposed to sitting out in the flint hills somewhere.

Mike Hawkins - (comment can't be heard) what should be (comment can't be heard). My comment is 1/10 inch of typical soils especially in western Kansas soil I might be familiar with unless you had the liner like you say pretty thick in some cases you might be talking about 5 or 6 or 8 foot thick 1/10 inch would be a challenge.

Don Carlson - The other thing if my memory serves me correctly in the Hamm report that one of the very first reports that came out they were using natural soils with no amendments. So obviously one option would be to add bentonite to it, mix it and enhance it. But again, we go into the cost vs. what's needed, what do we gain by it. But the question is validity of the 1/10 is something we've thrown out, we want comments on. Nothing we've talked about today is cast in stone. Again, the idea that we were trying to toss out these ideas was to prime the pump to get people thinking. A couple of them I was hoping to get a lot of input from the consulting firms because they're going to be the ones stamping it with their seal. Who wants to control the design, the liner manufacturer or the design engineer. Haven't gotten any comments back on that one yet. Some comments, some areas that we haven't gotten any comments back on closure. Financial assurance for closure. We're looking at probably somebody that has insurance or a bond on this paying 7% of the face value. That's a pretty good chunk of change annually. So there's a number of key elements in there that we figured would draw a lot of attention. The mandatory impermeable synthetic membrane liner over the Equus Beds. We've gotten a couple of comments already in some of the meetings that surprised me. People in the Equus Beds, the GMD, saying that's there are places in the GMD that probably synthetic liners not needed and the soil liner can be used. So the obvious question then is what's going to be the criteria as to when the soil liner is acceptable. If you think of anything after the meeting that you want to provide input or comments to us like I said our last meeting is in Wichita tomorrow night. If you think of anything feel free to give me a call, drop me a note, send me an email, whatever. We'll be taking comments until the 28th at which time I'll have to sit down and compile all the comments we've received. In the notice that you probably got I think Dorothy's email is listed on there and her phone number. If you get it to her she'll make sure she gets it to me. And if you want I can give you my card tonight too.

Unidentified Individual - What are they doing right now in the Equus Beds with the private, like individual lagoons?

Don Carlson - I have no idea. One of the things, there's a couple of nuances here I expect to come up at the meeting tomorrow. Again, my portion of the regulations here basically address municipal, commercial, and industrial liners. Single family lagoon systems have typically been regulated at the county level and I'm not proposing to touch that right now. There is, and I'm not very familiar with it I just know that it exists, there is a concern and I'm trying to remember what the boutique term they're using now it's basically an alternative centralized sewer system. The best I can explain it right now is if you have maybe 3 houses hooked up to a magic black box that goes to a septic tank that daylight into a pond. There is at some point in time based on the number of connections or the number of people that pond is serving that somehow that system magically becomes a municipal system that would be regulated by us as opposed to the county. At that point in time that pond would become subject to these provisions. The ones that we're looking at right now that are drawing a lot of the attention in the Wichita area by the Home Builder's Association and those kind of things, those would not be addressed by these regulations. Another area that would not be addressed by these regulations would be stormwater basins. Right now. That's also a big issue in the Wichita area. So we're basically looking at the

wastewater end of it. Anybody have anything else to offer to the cause? If you've got recommendations we surely appreciate them. So feel free to give me a call, fire me a letter, email whatever. We'd really like to have some input on this. Like I said the main thing here is this is basically what I call a pre-regulation meeting. What we're looking at is what people want to see and don't want to see in the regulations. Once we draft regulations and assuming that whatever we end up drafting satisfies the Secretary, and he decides to move on it, then we have the formal reg adoption process that I went through that you will have the public notice period 61 days to provide technical comments or the hearings to attend and provide the comments at. What we will propose to do is since you folks attended we had a mass mailing list. We'll make sure that you receive the notice regarding the draft regulations when we get ready to propose those. We will put them on our website just like we did these concepts and issues, and notice about this meeting so you'll have access to the details. If for some reason you try to call up the website and you have problems give us a call and we'll send you a hard copy. With that if there's no other questions. Yes sir?

Representative Dan Johnson - I'd like to say thank you for holding this meeting in Hays. I'm sorry there's not more interest in this because water is pretty important everywhere in the state, especially in western Kansas.

Don Carlson - Hopefully once we get the regulations drafted we'll go out for your information we sent a personal invite to every county. We sent a personal invite to every city within the Equus Beds. We had, how many did we send out Dorothy to the consulting engineers list? We sent a notice to all the state senators, state representatives. We've already had meetings with what I call the governmental entities in the Equus Beds. The Secretary I think has met with the livestock industry to advise them of the complimentary regs that are being run by our livestock group. There was another meeting I can't remember which one it was anyway there's been a number of meetings and like I said we'll probably have more outreach once we get closer to coming up with a set of draft regs for discussion. The Secretary basically has indicated to me that he would like to see these regulations out ASAP and again ASAP within the time frame that we're talking about here is if I had them ready to go today it's 16-25 weeks. So that means as soon as I get home I will be trying to develop something very quickly. He has basically referenced at a couple of meetings that he would like to see regulations out by the end of the year. So if you back calculate 16-25 weeks that's a very short turn around time for me to get something done as soon as we complete the public outreach that we're doing right now. Hopefully something will be ready to go in the near future. We'll public notice it. I also forgot about 4 or 5 press releases.

Unidentified Individual - You said there's 5 at the other meeting.

Don Carlson - Unfortunately the KDHE staff outnumbered the public. That wasn't a part of the five, there were two consultants, a private citizen and two industry representatives.

Unidentified Individual - There were no legislators? Remainder of comment can't be heard.)

Don Carlson - We're thinking that we'll get a real good crowd in Wichita just because of the Equus Beds. But again we've already met with all the governmental entities in a private meeting. So it's going to be interesting to see what kind of comments we get.

Unidentified Individual - (comment can't be heard)

Don Carlson - No. Well I appreciate it. Appreciate you folks coming out tonight and taking your time. Secretary Bremby appreciates your input. If you think of something feel free to give me a call at work. If you want one of my business cards I can get you one before you leave. With that thank you for showing up.

Proposed Lagoon Liner Regulations
Public Hearing -Hays, KS
April 22, 2003

Attendance List

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Pre-Regulation Public Meeting
Wichita, Kansas
April 23, 2003

Good evening. I'm Don Carlson. I'm the Chief of the Industrial Programs Section in the Bureau of Water, KDHE. The purpose of the meeting tonight to discuss a project that we're currently initiating. What I'm going to do is read you a brief statement here to kind of explain how we're going to run tonight's hearing and then I've got two small brief presentations. One for people who are not familiar with how state agencies adopt rules and regulations. I'll give a real brief overview of that. Plus, we will have a summary as to the regulation concepts and issues that we've thrown out on the table that we want people to provide input to us on. For the purpose of this meeting tonight I'd like to welcome you coming out in the rain to see us. We appreciate it. This is the last of three public meetings we've held. We held one in Topeka on the 16th. We held one in Hays last night and this one here in Wichita. The purpose of the meeting this evening is to advise you of Secretary Bremby's goal to develop and promulgate regulations addressing groundwater protection practices for sensitive groundwater areas in the state and specifically addressing areas such as the Equus Beds. As a part of the overall project, KDHE is developing and proposes to promulgate regulations addressing municipal, commercial and industrial wastewater lagoon systems. The purpose, besides developing those regs, the reason we're doing this is for a number of reasons. Obviously we're going to be trying to address groundwater sensitive areas. We're also going to try to develop in regulations a number of policies that we've implemented over the years to make them enforceable such as synthetic impermeable membrane liner regulations. We want to update our Minimum Standards of Design for the Wastewater Lagoon Systems and we want to address a number of other practices in regulation depending upon what type of comments we receive as a result of these meetings. The way we're going to handle the meeting this evening is I'll give you two brief overviews and then I will turn the microphone over to you folks to provide us with the input. The purpose tonight is basically to allow you folks the opportunity to provide KDHE with your comments as to what you want to see in the regulations or don't want to see in the regulations. To kind of prime the pump rather than just come out and say we're going to develop some regulations what are your comments, we thought it would be helpful to develop some concepts and issues to throw out on the table to hopefully get people thinking about these type of regulations. Maybe come up with some ideas as to better ways to implement these provisions or to address ideas or issues that hopefully maybe we haven't even thought about. So we're looking for your input tonight. There are no regulations drafted at this time for this process. This is a pre-regulation process so we're in the very, very early stages of this activity. When we open the meeting for the public comment what I will do is I will go ahead and call people who have signed in. When you walked through the door you were asked to sign a registration sheet. The registration sheet does 2 or 3 things. One is it registers your attendance at the meeting tonight and the purpose for that is two fold. One is it lets me know who wants to make an oral presentation tonight so I can make sure we allocate

plenty of time for the people to make their presentations. Secondly, during your presentation or if you present materials to us if you were to make reference to materials that we try to locate later on and have a hard time finding, it gives us the ability to try to track you down and ask your assistance to maybe clarify where these materials are or what the information was that you provided in the form of clarification to us. So with that what I will do is I'll go ahead and move on into the presentation part of it. Can you hit the lights Dorothy? Can everybody see that? If you have problems holler, raise your hand if you can't hear me, whatever.

The first thing I want to try to address is how state agencies adopt regulations. A lot of people don't understand that. They have the misconception that we can magically develop and adopt regulations overnight. That's really not the case. We have basically two sets of criteria that we are developing. All state agencies have to go through a process here mandated by statute and regulation. Where we're at right now is basically we haven't even started this process. We're up here in what we call the pre-regulation development process. I'll go ahead and try to explain what we're talking about here. The pre-regulation process will involve a number of steps which I will go through and as you can see the list is fairly significant to the point where we get down to the bottom line item, the permanent regulation process. That's where we enter into the mandated process that all state agencies have to go through. So what we're doing now is basically above and beyond what is required of our agency in the form of developing regulations.

The first thing we do is we sit down and we try to identify if we believe there is an issue or a problem that needs to be addressed, what kind of concepts or issues need to be looked at and again, this was being done primarily to help set up some of these public information meetings like tonight. Once we identify areas or issues or concerns that we think need to be addressed we try to evaluate whether or not there are existing regulations out there that have to be modified or whether we have to create a whole set of new regulations to address whatever those issues or concerns are. Concurrently with that, we also have to determine whether or not we have adequate statutory authority to modify or address the regulations to do whatever it is we're going to propose to do. If we don't have statutory authority to address this that means we have to go back to the Legislature, ask them to pass a bill to give us statutory authority and then at that point in time we're authorized to go ahead and move ahead to develop and adopt regulations. At this time with the information that we've tossed out on the table that we think needs to be looked at, we don't believe that there is a statutory issue that needs to be addressed. Where we're at in the process right now is we've compiled these concepts and issues, we've tossed them out for public consumption, we want to get feedback from you folks as to what you want to see, don't want to see in the regulations, if you like some of the ideas, but want to tweak it somehow that's the kind of information we're looking for. In going through this process, basically we have set up and conducted a number of individual meetings with various groups. We're conducting public forums which is what we've done in Topeka, Hays and in Wichita here this evening. We've also put out notices both in statewide press releases, the Kansas Register and several mass mailings to various clientele of the proposal to look at these regulations and solicit input. After we conduct the public meetings what we will end up doing is sitting down, trying to summarize all the information that we've gathered through the various meetings, the public information gatherings

such as this evening, sit down and evaluate what the comments are and try to evaluate what we want to do with respect to the regulations, what kind of ideas we picked up, what ideas are looked on favorably and try to then go back and develop a rough draft of the regulations. When we complete the rough draft of the regulations we will basically pass it around in house at KDHE to look at such things as a technical review as to whether or not some of the things we're asking or going to require, is there a technical problem with the requirements that we're proposing. At the same time the lawyers will look at it from the standpoint are the requirements going to be legal and enforceable and then obviously we have upper management that's going to be looking at such things as policy and management issues. Concurrently with developing the regulations as a part of the regulatory process there is another document besides the draft regulations that has to be developed and implemented. It's called a regulatory impact statement. Most state agencies only have to do two of these three items up there. Since the regulations are going to be environmental in nature, we end up having to do a third item. Basically the regulatory impact statement will do a summary regulation, by regulation as to what the regulatory impact will be involved with respect to the proposed regulations or the modifications to an existing regulation. We will do an environmental impact analysis as to what benefits will accrue, how this will benefit the environment, and then we will also have to address an evaluation from a fiscal standpoint. This is not only a fiscal impact on the regulated community, but on the agency and other organizations that may be subject to administering these type of regulations. Assuming we have the package put together, everybody on the staff believes it's doable, we submit it to the Secretary, he evaluates it to see if it does whatever it was he was looking for, if he gives us the green light at that point in time we get started in to what the formal regulation adoption process is and this is what every state agency is required to do. Everything up to this point in time basically has been above and beyond. So we've had public outreach, public participation that really isn't required as a part of the reg adoption process, but we feel it's necessary to obtain input and information prior to going ahead and developing the regulations. The formal reg adoption process at the state level consists of 9 steps. The one thing I want to try to impress upon you, or two things out of this presentation is one, the process is not quick, it was not intended to be quick, it was not intended to be easy. The other thing is that there are a number of other avenues in the form of public participation that you have other than this evening if you want to provide comments and input regarding these proposed regulations.

The first thing we do is we take the draft regulations to the Department of Administration. You can think of these people as basically your worst nightmare, your grammar teacher in high school. They will rip it apart, grammar, format, structure, spelling, the whole nine yards and you will make corrections until you satisfy them. At some point in time they will decide to sign off on it. Once we have something with the form and format to their satisfaction and meets their requirements, we then take it across the street to the Attorney General's office. The Attorney General's staff basically evaluates the regulations from the standpoint of legality. Did the state have the statutory authority to implement, are these enforceable? They sign off on it. If for some reason they don't like something and want us to make a change, we have to make that change, we have to take that reg back through the Department of Administration again, have them review and sign off on it and at some point in time the Attorney General's office and Department of

Administration say it's good enough then we can go ahead and move on. We will then publish in the Kansas Register. The Kansas Register is the official newspaper or document that agencies and the legislature public notice formal legal requirements. It's analogous to the Federal Register at the state level. The public notice in the Kansas Register is for a period of 61 days. There's a 61 day period in which you can review, submit to us comments and information that you want us to consider regarding the draft regulations. During the 61 day period we also have to go before the legislature. The Joint Committee on Administrative Rules and Regulations, that would be members of the Senate and members of the House, they will review the draft regulations, the regulatory impact statement, and they will provide us with their comments and input as to what they like and don't like about it and provide us written comments in that regard. At the end of the 61 day period we will then, and we're required, to hold a minimum of one public hearing. More than likely it will be more than one. Again this is the second opportunity besides this evening, or basically the third opportunity besides this evening. Besides the 61 day public notice period you can attend the public hearing, submit comments, during the process at the hearing you can probably submit comments to the agency prior to the hearing. So again, that's another opportunity. If we decide we have to make changes based upon the input during the public notice comment period or the public hearing, we will go back and make the revisions to the regulations. Any revisions to the regulations then again have to go through the Department of Administration and the Attorney General's office, they have to review and sign off on them. In theory at some point in time everybody agrees and accepts them. It is then up to the Secretary to make a determination as to whether or not he's going to move forward to adopt those regulations. If he decides to adopt the regulations, he then public notices in the Kansas Register his intent that he has adopted the regulations and after publication, 15 days after publication in the Kansas Register the regulations take effect. So the big thing here again is, it's not an easy, quick and dirty process. If I have the regulations ready to go tonight the soonest I could get it through the mill is probably 16 weeks, more likely it would be 25 weeks. That's on a fast track. So the time frame there is critical.

The second presentation is basically to go over information that we had on our website. If you folks we're looking for it, it was available on the internet or you could contact us for a hard copy. Basically what, as I indicated, what we're trying to do here rather than to come to the meeting and say we're going to develop some regs, what is it you guys want us to do, we thought we would prime the pump by tossing out some ideas for consideration. Again, nothing is cast in stone. We've got some real good comments regarding some of these issues so far. But basically what my part of the project is for the agency is to develop regulations or to look at the need for regulations for addressing municipal, commercial and industrial wastewater lagoon systems in regard to how we can address or enhance the protection of groundwater resources. The proposed regulation concepts and issues, again these are ideas that we thought in our mind may need clarification, may need to have some regulatory background to enforce or ideas that we really don't have a opinion of one way or the other, but we thought we might want to throw it out and see what kind of feedback we get. There's a couple of ideas that we threw out that we're seeking technical information from consulting engineers, liner manufacturers, like that. To overview what we're trying to address, basically I'll go through this real quick and then hit some of these

in more detail. We're going to try to target sensitive groundwater areas. Primarily what we're looking at is areas where we have extremely shallow groundwater or groundwater resources that we feel are environmentally sensitive and they are a significant resource that's being utilized by the public in Kansas. The Equus Beds is one of those types of resources. We're looking at tightening up as one option our current soil liner requirements. We're looking at developing a set of regulations addressing the design of impermeable synthetic membrane liner systems. You can think of these as plastic liner systems. Right now there are not regulations on the book or design standards that enforceable that address these type of systems. We're looking at trying to divide up various types of municipal, commercial, and industrial wastewater treatment systems. Municipalities we're looking at treating municipal and commercial facilities that primarily handle domestic type of waste with either a soil or a single synthetic membrane liner. For the industrial operation, and I'll get into this later, we're looking at creating a tiered system. Industries have the potential for a wide variety of waste. We have a lot of industries out there that generate domestic waste, your sinks, stools, toilets just like a commercial operation. We have other facilities that we believe represent a low pollution potential. These kind of operations may be generating non-contact cooling water. There may be a rock quarry where they're crushing gravel, they're washing the aggregate, the dirt fines from the washing operation are being settled out into a pond. We believe that these kinds of systems represent a really low pollution potential from a groundwater protection standpoint. The last group we have basically are what we consider the process wastewater discharges. This would be things such as organic solvents, heavy metals, hydrocarbon products, anything you can think of, organic pesticides. Those kind of things we're looking at having a more stringent design requirement. We believe that if we're going to go ahead and try to provide enhanced groundwater protection that a lot of the information in designing systems particularly soil liners are going to be very dependent upon the hydrogeologic information that is generated by the consulting firms. So we're looking at enhancing what the hydrogeologic information is going to be. This would be the geology, the soils information, the groundwater information. Again, we're looking at creating a set of design criteria for the synthetic membrane liner systems. Whether we're talking about a soil liner system or a synthetic membrane liner system basically one of the things we think needs to be addressed in the regulations is some type of quality assurance/quality control practices both during construction and post construction. This will involve testing, some type of certification. And last but not least, at some point in time either the company's are going to decide to cease doing business or the useful life of the wastewater lagoon system is going to come to a close or the area is going to be served by municipal utilities and the lagoon system needs to be closed out. We're looking at developing in regulatory format some type of closure requirements. Getting into the details, roughly what we're tossing out on the table and we want people's comments on include reducing the 1/4 inch/day to 1/10 inch/day for soil liner requirements. We're looking at provisions where if you are going to locate or site a new lagoon system in an area where there's very shallow groundwater if you can't provide a minimum of 10 feet of separation distance between the pond bottom and the top of the groundwater table the site will not be approved. One of the things that we tossed out we're looking for a lot of comment on is the mandatory requirement for any lagoon over the Equus Beds to have an impermeable synthetic membrane liner system. Lagoon systems that are in existence basically what we're going to propose and we

want input on is grandfathering them unless we can prove that there is an environmental or public health threat that needs to be addressed. For the industrial system, I told you about the three tiered system we're looking at, we want some input on that. Should there be a different way to handle these. A different type of criteria. For the industrial lagoons, for the municipal, commercial, and industrial for domestic only where there's a low pollution potential type waste, what we're basically allowing people to do is either use a soil liner or if they can't meet the 1/10 inch/day requirement go to the single synthetic membrane liner system. The nuance between that provision and the industrial lagoons that handle the process wastewater is we're looking at for industrial lagoons a dual liner system. You can think of a primary liner, an intermediate leak detection space between the primary and the secondary liner. Think of it as a bowl within a bowl. What we're looking at is a dual liner system. The intermediate space between the two liners to be able to monitor for a leak of the primary liner because when you put in a synthetic liner it's not if it's going to leak it's going to be when it's going to leak. We also want to have the capability of dewatering this space between the two liners. Since we don't have regulations as to what pass/fail criteria will be for these types of liners one of the things that we're throwing out on the table that we want some input particularly from the liner manufacturer's and consultants on is the pass/fail criteria of 1/64 inch/day. Hydrogeologic information, again I told you we were going to try to look at tightening up the information that's submitted. We're looking at requiring borings or excavations at the lagoon site to a depth of at least 10 feet below the proposed pond bottom. This is going to be done for a number of reasons. One is to look at the soil materials that can possibly be used for the soil liner. Also to confirm for the depth to groundwater. Looking at establishing some type of criteria as to how many excavations or soil borings for surface acre of pond are going to be needed, we threw out on the table one per acre. We're asking that the excavations in the soil borings be logged and a determination as to whether or not groundwater exists. While the samples are being collected in regard to the borings or excavations if we're going to have a soil liner constructed out of this material we want to have information regarding the classification of the soils, compaction requirements, permeability analysis. We want to have this information summarized in a hydrogeologic report or the data submitted to us and if we are in an area where we have some concerns about the possible location or siting of a new lagoon we want to have the capability of requiring notification of KDHE so that we can witness the borings or the excavations personally to satisfy whatever concerns or requirements or problems we may have with the proposal. On the soil liner design set up requirements as to what the consultants have to submit to us, what we're looking at is the hydrogeologic information, the soil testing that was done in the laboratory, the calculations that were used, and the assumptions in the actual design. And we're tossing out, again, minimum soil liner thickness of at least one foot. For quality assurance/quality control in regard to the soil liner systems what we're looking at is we want to develop up front early into the game some type of soil liner post construction testing protocol that we agree with. Obviously part of that's going to be what the pass/fail criteria is going to be, how many samples are going to be collected, what type of tests are going to be run for how long. Basically we want to have this agreed to up front. We want to have people monitor the construction to make sure that what is actually being designed was installed and basically we're going to require somebody to take responsibility for putting their name on the line that whatever was installed was done consistent with the

construction practices plans and specifications approved by KDHE. One of the things that will require is basically oversight and monitoring of these construction activities. In regard to the plastic liner systems, the impermeable synthetic membrane liners, we're looking at coming up with basically some very bare bones minimum requirements. Minimum thickness we're throwing out as 30 mils. That's basically 30/1000 of an inch thick. That's the minimum thickness of a liner. One of the things that we feel is needed since the liner manufacturers have various blends, products as to how they manufacture their specific plastic liner we want to have them provide a certification that their liner is capable of containing whatever material is going to be directed to that pond. They're the only ones that have the best knowledge as to whether or not their liner will be eaten up by solvents or is not compatible with hydrocarbon products, these kind of things. We're looking at trying to identify some minimum physical construction requirements. Obviously we want to have some embankment stability. We don't want to have sloughing or slumping that will stress the liner system, create stress tears in the liner. One of the things that we're looking for feedback if there are consultants out there right now or liner manufacturers in the crowd, right now we're looking at basically requiring that the liner be installed per the manufacturer's recommendations. This gets into a very testy area because if you're a design engineer and you're putting your stamp and your P.E. license on the plans and specs you may want to do it different. So we're looking at looking at input from the consulting firms and the liner manufacturers in that regard. We want to require and identify a seam testing protocol. Again this needs to be done early, not at the time we start construction. What we're primarily looking at right now is having 100% of the seams tested. But the type of test that is actually being run is going to be dependent upon the type of liner and the type of seam that's going to be provided. Some liners can be tested, pressure tested with an air lance. Some can be done with soap and a vacuum box. It's going to be dependent upon how the seams are constructed. We want to require the design to conform where the regulations don't address this with our current minimum standards of design and again if there's going to be the need for any hydrogeologic work in an area that we have some concerns about we want to have the capability of being out there when this hydrogeologic work is being done. The nuances between the industrial and municipal liners. When we're talking about a municipal, commercial or an industrial facility that handles only domestic waste or an industrial facility that has low pollution potential if they're going to use a plastic liner we're willing to allow them to use a single plastic liner. Industrial lagoons the majority of them that will handle process wastewater with the chemicals, heavy metals, solvents, organic materials, hydrocarbon products, we're looking at a dual liner system, intermediate leak detection capabilities and the capability of dewatering the space between the two liners. Industrial lagoons we're going to demand that a minimum of two cells be provided and that's done for a number of reasons. One is it's going to be a lot harder to get rid of industrial waste if we reach the point where a leak does occur. On municipal lagoons there is a good possibility that the wastewater could be land applied at an agronomic rate which would be of beneficial use of the water. If you've got a pond full of heavy metals or solvents that's not going to be acceptable. So by providing the two cells we have some flexibility that we may be able to shift or transfer a significant quantity of the waste and minimize the amount that has to be disposed of initially. Industrial lagoons, we're looking at requiring two foot of soil beneath the secondary liner. This is a structural issue that we'd like to have comments on. This

is not intended to be any type of liner barrier or groundwater protection system. This is basically protection for the secondary liner. The secondary liner is your backup and we want to protect it. Again, we're looking at quality assurance/quality control practices. If we go ahead and are looking at trying to come up with these design requirements we want to make sure that whatever the design initially required was actually installed. Again, we're talking about developing submission of a liner post construction testing protocol that we agree to and we make sure that everybody agrees to what the pass/fail criteria is prior to the testing. Again, require certification that the liner was installed in accordance with whatever plans and specifications KDHE approved. Again this will require monitoring of the construction and liner installation. And again, if we're going to talk about some type of whole pond leak testing even though we may agree to the testing protocol we want to be notified so that we can witness the actual testing. In regard to minimum standards of design, again, the things that we've tossed out right now are primarily addressing tightening up the liner sealing requirements, the amount of material that can possibly get to the groundwater. There are a number of other design standards, design requirements both that the feds have or that we may have in other regulations or standards that we will have to somehow incorporate into the regulations so that the design engineer and operator are aware of them. In regard to soil liner systems, one of the things that we're looking at is we want to minimize the potential for coming into contact with any vertical penetrations down to the groundwater. Primarily what we're looking at is trying to somehow identify oil, water and gas wells that are abandoned, that are unplugged, so what we're looking at and tossing out on the table is you choose a lagoon site, if you have information that you can get from KCC, from the Kansas water well database, from the property owner that has knowledge that there are abandoned wells on site within 600 feet of the proposed lagoon site, we want to know about it. We want to try to make sure that those abandoned wells are plugged out properly or basically we may have to either disqualify the site or require the site or layout to address that. If we believe that there are wells on this area but we can't locate them for whatever reasons there may be a record that there was an oil or gas well somewhere in the vicinity and it was 60 or 70 years ago. There's no physical evidence to identify it, basically what we want to have is some type of note put on the plans and specifications to warn the contractor that there's a possibility he may be running into one of these abandoned wells and should take note of it. In the event during construction activities we find one of these abandoned wells that nobody knew about we want to create in regulations a situation that basically stops the construction activity in the immediate vicinity of that well. We don't want to adversely impact the well. We want to be able to go out and evaluate it. Depending upon whose well it is whether it's KCC's oil and gas well or a water well that we're responsible for, we want to make sure that we identify what type it is, how it was constructed, what are the potential problems, and make sure it gets plugged out. Basically construction at the site can continue at the contractors and operators own risk but not around this well until we give clearance that the well has been properly handled and taken care of. For monitoring wells we're looking at putting in provisions that if we believe a monitoring well system is needed for whatever reason that we can require the installation of the monitoring well. We want to put in provisions because technology keeps changing to allow us flexibility to use some type of equivalent technology other than monitoring wells if that technology can adequately monitor pond leakage or groundwater contamination. Again, if we're going to require a

monitoring well system or some type of alternative to a monitoring well system we basically want to be able to agree on that prior to that type of system being employed and that will be part of the construction plans and specifications. Item A up there basically is intended to, we need to put something in the regulations that makes the designer and the operator aware of the fact that what appears in the regulations are minimums. They're not maximums, they're minimums. Regardless of whether the design and the construction meets the minimum requirements, it's still contingent upon the designer and the operator to design a system that is functional, that works functionally well, protects public health and the environment, and is contingent upon the operator to operate that system in a manner that protects the environment and public health. Any proposals after we've reviewed and approved plans and specifications because of construction changes or whatever we're looking at adding a provision or a regulation that will address the requirement to have prior approval before the implementation of that. Getting into the pond closure requirements. Again at some point in time that pond needs to be taken out of service, it's no longer needed for whatever reason. We want to create a regulation as a part of the permitting process that requires an operator to notify us when they cease using that wastewater lagoon system. The regulations need to address the fact that a viable water pollution control permit still needs to remain in effect until such time as the lagoon system has been properly closed out. For new facilities, expansions or significant modifications we're looking at requiring the submission of a closure plan. Basically we'll detail how the liquids and sludges will be taken out of the pond and removed and soil testing, groundwater testing after the pond is closed to make sure that no contamination has occurred. We want to establish what the contents are, that ought to be in the closure plan. Some type of provisions as to when does the closure plan need to be modified or updated. And last but not least, once we go ahead and review a lagoon closure plan, give our authorization to close out the lagoon, a time frame for somebody to physically close out that lagoon system so we don't have a lagoon system that is in perpetual closure. Last but not least, the famous variance. We need to put in a provision in there that allows flexibility for a designer and operator or somebody that comes in with a better idea as to how to skin the cat that if they can propose a procedure or method, construction practice whatever, that provides adequate protection of public health and the environment we want to have the flexibility of being able to consider that and a process for reviewing and approving those type of operations. And that's basically the end of my presentation. Again, there's nothing here that we've thrown out that is cast in stone. We're looking for input from you folks as to what you like about that, don't like about that, what are the items that we didn't have up there that you would like to see up there. The purpose of this meeting is for you to provide us with that input. With that a number of people have indicated their desire to present testimony at tonight's hearing and if you'd come up after I call your name, use the microphone here I'd appreciate it. Again, part of the reason we're tape recording the meeting tonight is this information is going to be taken back to Topeka and what notes Dorothy missed or I miss, or we believe that we need some clarification we'll hopefully be able to pick up the information off of the tape. If we can't do that, then we're going to fall back on your sign in and attendance cards. If you provided an incomplete mailing address or information to give you a contact, please get with us after the meeting and complete that information. With that the first person I'll call is Keith Lawing.

Keith Lawing - Good evening. My name is Keith Lawing and I'm the Executive Officer for the Regional Economic Area Partnership also known as REAP. REAP is a council of local governments in south central Kansas with 31 members. The city and county governments in REAP have voluntarily joined together for two primary purposes. First to guide state and national actions that affect the economic development in the region and second, to adopt joint actions among member governments that enhance the regional economy. Now REAP chairman, Mayor Mike Leedy of Winfield could not be here this evening and asked that I provide comments on his behalf. One of the most significant regional priorities for REAP is the protection of the public water supply in south central Kansas. The Equus Beds Aquifer is a primary source of water for many REAP communities and is clearly critical to the economy in south central Kansas. The members of REAP believe that the protection of the aquifer must be enhanced by the adoption and enforcement of site specific regulations. The geography and the geology of the Equus Beds is unique to other aquifers in the state and it appears obvious that a one size fits all approach to water protection is not good public policy in the State of Kansas. On February 10, 2003 the local governments in REAP adopted a resolution supporting greater protection of the Equus Beds Aquifer through site specific and scientific based water quality regulations. I presented a copy to staff tonight. This resolution has also been sent to Governor Sebelius and also Secretary Bremby. Members of REAP have had the opportunity to meet with Secretary Bremby and KDHE staff and they are pleased with the commitment that is now being brought to this issue of groundwater protection. On behalf of REAP I would like to thank Secretary Bremby and KDHE staff for making this issue a high priority. The members of REAP are very anxious to review the regulations when released and look forward to working with KDHE and other stakeholders in helping to protect the Equus Beds Aquifer. I appreciate your time this evening. Thank you very much for coming down and holding this hearing in Wichita and I would be more than willing to respond to any questions if there were any. Thank you.

Don Carlson - Thank you Keith. Another reason for giving us a complete address on your sign in sheet, you just reminded me of this, I've indicated at other public meetings that even though we have sent out mass mailings, held statewide press releases, published this in the Kansas Register, people who have taken the interest to show up at these public interest meetings, public participation meetings, if we've got a complete mailing address we will make every effort to notify you when the regulations are proposed, ready for review, how you can get a copy of them or access them on the internet. So again if your sign in sheet is incomplete, please see us after the meeting and fill out the further information. The second person on the list is Howard Miller.

Howard Miller - I didn't choose to make any comments.

Don Carlson - Okay it says make an oral presentation. We'll pass on that one. Bessie Black.

Bessie Black - Good evening.

Don Carlson - Good evening.

Bessie Black - I'd like to ask you a question. What is the length of time that these liners are good for? Do you know that?

Don Carlson - That depends upon how they're used and how they're installed. How thick they are.

Bessie Black - When you're talking about liners for cities.

Don Carlson - Liners for cities the typical design life we have seen 10-15 years probably.

Bessie Black - And then someone regulates when they're ready to be changed?

Don Carlson - That's going to be a part of these regulations. Right now there are no regulations addressing the synthetic liners.

Bessie Black - Okay. I have a short speech. I am Bessie Black and I'm here to represent the Equus Beds. Good evening. I'm here to give you some true facts on pollution. I worked for Culligan for two years. I am so glad to see so many here because I know you don't want to drink polluted water. I have to admit I do have a drinking problem. I like to drink pure, unpolluted water and I know you do to. However, I believe this meeting is about 20-30 years too late. I have learned last year that the Equus Beds Aquifer is polluted 60 feet down right now and that is a fact. As far as I'm concerned we should have had some guidelines from the State of Kansas to protect this aquifer a long time ago. After working for Culligan for two years I learned that 1% of the water we bathe in goes through your skin. And every glass of water you drink goes through your kidneys. Since our water is on the Equus Beds Aquifer it is polluted 60 feet down. What's it going to be like in the future if we don't do something now? We need to look ahead 100-150 years ahead, not just 2 or 5 years. We need clean water now. Our children, our grandchildren and our great-grandchildren are going to need this water. Right now developers are putting housing developments on the Equus Beds Aquifer with private septic tanks and wells. This will indeed pollute the water even with the newly designed septic tanks. Just every day living pollutes the water. Once these homes are built on the Equus Beds it will be polluted forever. Never again farm ground, it's houses forever. To be polluted forever. I would like the State of Kansas to make all developers to put their housing developments on city sewer and water, but it would not protect it completely. But it would help. We need also to teach our children, our grandchildren how important our water resources are. Our water is just as important as the air we breathe. Think about it. You have to have water. If we keep polluting this aquifer we're going to pay in two ways. Big price. We're going to pay citizens we must protect this vital resource and it's so important to so many. Thousands of people drink this water. It makes common sense not to pollute the only source of water we have. Everything we put on the ground goes into the water. Whether it is herbicides, insecticides, gas, oil, paint, fruit tree spray, fertilizer or chemicals. It eventually gets into the water. You just don't put a landfill on the Equus Beds. I would like to suggest that our county, state and city officials do their research before making important decisions for further development. We cannot keep polluting

this aquifer without some very serious consequences. Four out of five of our county commissioners voted to put the Bentley Meadows addition, 36 homes, on the Equus Beds all on septic tanks and private wells which is after every agency turned this developer down. I believe they did this to get the tax money. But in my opinion they should have waited to have these homes on city sewer and water to protect the water. I'm not against people having homes because it's the American dream. But we must protect this water. It is the lifeline of so many. To finalize, we can protect this water or we can pollute it. If nothing is done we will pay in two ways. We will pay for health services or a large water cleanup. In this case we may have a drinking problem no more. Thank you for listening.

Don Carlson - Thank you Bessie. The next speaker is Jay Barnes.

Jay Barnes - Thank you Don. I'm Jay Barnes. I'm Executive Director of Kansas Natural Resource Council. I would basically like at this point Don to simply reserve the right to make a written presentation to you right away. I do have one observation this evening. While site specific regulations do appear appropriate for a highly sensitive situation like the Equus Beds I also think there is much that we can learn from this whole exercise about full protection of groundwater statewide. So I commend KDHE for what they are doing in going out for these hearings and in pulling all of the comments together. We have to find ways to protect the groundwater. I appreciate what you're doing. We will submit a written statement to you then. Thank you.

Don Carlson - For everybody's information I'll mention this at the end of the meeting. We will basically, tonight it the last public participation process that we're holding for the pre-reg part of the project. If you have comments we would request that you get them to us by the 28th if at all possible. The next speaker is Don Skokan.

Don Skokan - My name is Don Skokan. Sorry, I'm getting over a bad cold here but I'll try to get going here and maybe you can understand what I'm saying. I'm a citizen. I don't represent anyone in particular. My questions have to do with the, mostly focused on alternative community sewer systems. In your public notice it basically is talking about lagoon liners and so forth and the system I'm talking about doesn't basically require the use of a lagoon so I was wondering if you would address that in the proposed regulations. Just a few comments that I would make, what knowledge that I have about these alternative community sewer systems. I have received some information from the Sedgwick County, Irene Hart and I also have gotten information from Mark Bradbury the Director of the local KDHE. Plus additional information that I've acquired just by reading. One of my questions is basically if two or more people hook up together for their collection of their wastewater will these new regulations cover that situation. This would be analogous to what I understand is probably what is going to happen with Bentley Meadows, the lady referred to that earlier, which is a housing development somewhere in the neighborhood of 25 homes on two acre lots and the system as I understand it, unless there's been a change that I'm not aware of, is going to basically use these alternative community sewer systems (ACSS) where the water is pumped to a recirculating sand filter which is a treatment

system. It's not a lagoon system, it's just an area that can be expanded depending upon the needs for additional community residential. My understanding of these alternative community sewer systems are that, at least in the view of Mark Bradbury, that if they're established properly they can function effectively. But the problem that they apparently have had in the past is that they are the long term operation and maintenance of these systems has been in the hands of private groups and that seems to be the downfall of that particular system. Apparently the recommendation, and I believe that the Sedgwick County has the ability to establish this, is to establish county sewer districts which would be a government entity that is the responsible permit holder. I guess somewhere in here I'm thinking that with that kind of arrangement that there would be someone here long term that would see to it that these things are operating properly. I think that's the end of my comments. Thank you.

Don Carlson - Thank you. The next speaker is Bob Myers.

Bob Myers - Good evening. My name is Bob Myers. I'm the City Attorney for the City of Newton. We appreciate the opportunity to address you tonight on these matters. The City of Newton's been a public water supplier for over 100 years. We derive our drinking water from the Equus Beds groundwater aquifer. Newton is one of 25 cities plus three rural water districts for whom the Equus Beds is either the sole or the principal source of drinking water. In addition, numerous farm families obtain their water directly from the aquifer either for their own drinking water or for water essential to serve their livestock or water their crops. All together the Equus Beds Aquifer supplies high quality drinking water for approximately 500,000 Kansans plus it's an essential water resource for numerous business, industries, and agricultural operations in this region of the state. Of the five defined groundwater aquifer regions in the state the Equus Beds is unique. First, it's by far the most heavily relied upon as a drinking water resource and second it is the most vulnerable to pollution since a significant portion of the aquifer is relatively close to the surface of the ground and is overlain by sandy or highly porous soils through which pollutants can readily pass. Portions of the aquifer have already been exposed to significant pollution from past activities which were not well regulated or were not regulated at all. The taxpayers of the State of Kansas have already spent consider sums of money attempting to deal with this past pollution and will continue to spend significant money addressing these problems for the foreseeable future. We cannot afford to expose the aquifer to further pollution either from a public health standpoint or from an economic standpoint particularly when there is reasonable, affordable technology that exists to provide needed protections. Prior to 1998 when it appeared that Kansas may have become a desired location for large scale swine operations enough public concern developed to prompt the Kansas legislature to undertake a study about the safety and the adequacy of lagoon systems as repositories for wastewater. The Kansas State research and extension was commissioned to conduct a three year scientific study which included monitoring and performance testing of lagoon systems all over the state of Kansas. There were several key findings which resulted from the K-State study for which I think are unique to our consideration tonight. First, they found that lagoon systems in Kansas of various types were found to be fairly consistent in terms of their seepage rates. And here we're talking about seepage of lagoon contents through the bottom of the lagoon system, with the seepage rates being small, although

not negligible. They also found that even with low seepage rates high concentrations of nutrients in the effluents that flow into lagoon systems can cause significant movement of nitrogen and other components into the underlying soils. They found that some nutrients such as ammonium typically remained within a relatively shallow zone below the bottom of the lagoon while others such as chloride will penetrate to greater depths and readily move into shallow groundwater. They found that the risk a lagoon system may pose to underlying groundwater is very site specific and is dependent on a number of factors including seepage rate of the lagoon, the concentration of the waste in the lagoon, the types of soils and their properties that are beneath the lagoon, the depth from the bottom of the lagoon to the groundwater, and the expected time of use or the expected life of the lagoon. Finally, and one of the more significant findings was that one of the greatest risks for groundwater contamination occurs not while the lagoon is operating but after it's closed or abandoned. In addition to pointing to aspects of lagoon systems which are not currently being addressed by regulations this study also illustrated that a one size fits all approach to lagoon system regulation was inappropriate, that lagoon types and the conditions present at their respective locations are significant factors in terms of what is necessary or what is not necessary in order to protect the environment. In June of 2000 the City of Newton hosted an environmental forum following the release of the preliminary results of the K-State study. At that forum then Secretary of KDHE Clyde Graeber announced that KDHE was proceeding immediately with the development of science based site specific regulations for lagoon systems based largely on the K-State study as well as other research that's been done around the country. However, those regulations were not then forthcoming. We commend current Secretary Bremby and the KDHE staff for resurrecting this initiative. The City of Newton strongly supports the concept of developing environmental regulations and standards on a science based site specific basis. In the area of water quality we have a large disparity just within the borders of our state as to geographic, geological and other environmental conditions and as to the particular public health and safety needs. If the science exists to support the implementation of site specific regulations of any type there is simply no reason not to proceed. The issue of water quality is too complex and it's too important to be governed by inefficient and even unfair standards which are uniform only for the sake or convenience of uniformity. We had the opportunity to attend a prior session conducted by KDHE in which an outline of the proposed regulations was reviewed. We support the concepts and the objectives contained in the proposed regulations and believe this represents a reasonable approach to tailor the regulations particularly as they would be applicable to sensitive groundwater areas such as the Equus Beds. In particular I offer the following comments as to those proposed regulations. First the requirement of a minimum of a 10 foot separation between of the lagoon and the top of any underlying groundwater is not an overly stringent requirement. Any lagoon which is that close to the groundwater will present a risk to the groundwater. Thus, it will be important that there be monitoring wells associated with any lagoon in an area of shallow groundwater. The adequacy of the 10 foot separation requirement will be tied directly to what the final regulations require in terms of minimum lagoon design specifications. Thus, if for any reason the final regulations allow a seepage rate for synthetic liners of more than 1/64 inch/day or if for any reason the draft regulations for synthetic liners in sensitive groundwaters are lessened then the 10 foot separation distance requirement is going to have to be considered to be increased. We support additional research

and review as to the establishment of required minimum thicknesses for synthetic liners particularly as to lagoons in sensitive groundwater areas to determine what kind of a thickness is needed in order to gain optimum performance and protection. The need for a closure plan and some means of guaranteeing performance is critical. As noted in the K-State study the biggest danger a lagoon system poses to the groundwater is after it is no longer being actively used. If a bonding requirement to guarantee closure is cost prohibitive then some other means needs to be developed either in substitution of or as a permitted alternative to a bond. Development of a closure trust fund similar to what has been used for the funding of removal of underground storage tanks would seem to be ideal if there's a way that can be found to fund this. Another option would be the development of a means by which the state would acquire a lean against property to secure the cost of any necessary state action to carry out a closure. And ideally this should be a super lean that would be superior to any other lean or mortgage interest in the property. The availability of a variance from specific regulatory requirements will be an important part of these regulations either where it can be shown due to local conditions the danger a requirement is intended to address may not be applicable or as an allowance for the use of new technologies. This is an important element to maintain the flexibility of the regulations and to honor the concept of regulations being science based and site specific. Finally, the regulations that are developed for municipal, commercial, and industrial lagoons should then serve as a model on which regulations are developed for agricultural lagoons. I think it is extraordinary that KDHE administration and staff is going to these kinds of efforts to obtain input into the development of these regulations and I thank you very much for the opportunity to present these concerns and comments.

Don Carlson - Thank you. The next speaker is Kay Johnson.

Kay Johnson - Hello, my name is Kay Johnson and I'm the Environmental Compliance Manager for the City of Wichita. Good evening, it's nice to be here, just a little wet outside. The city has reviewed the documents that KDHE provided regarding municipal, commercial, industrial and wastewater lagoon management and we appreciate this opportunity to provide comments regarding these proposed regulations. The city is only providing general comments because we do not have available the specific comments so we will be providing some additional comments when you get the specific regulations out. Over the years the city of Wichita has expressed concern and provided specific information to KDHE regarding the importance of the protection of the Equus Beds Aquifer. This natural resource is classified by the state as a sensitive groundwater area due to distinctive soil, climate, geologic, and hydrologic conditions which substantially increase the potential and vulnerability to contamination. The city of Wichita and other cities have existing water supply wells in the Equus Beds which makes this aquifer a vital water supply for the region. Therefore, this aquifer should have more stringent requirements for it's protection. So in that regard the city of Wichita is supportive of KDHE's concept to a) require synthetic liners for all types of wastewater treatment lagoons in the Equus Beds; b) require a site specific up gradient and down gradient monitoring program for each wastewater treatment lagoon in the Equus Beds; c) require facility closure plans for wastewater treatment lagoons in the Equus Beds; d) require a separation of greater than 10 feet from a wastewater

lagoon's bottom liner and the top of the groundwater; and e) prohibit new lagoons if this separation does not exist. KDHE has recommended that existing facilities be grandfathered as long as they don't pose a public health or environmental threat. The city of Wichita agrees with this concept provided that all existing lagoons in the region of the Equus Beds have some type of periodic technical evaluation program including some actual groundwater monitoring to provide evidence that it is not a threat to human health or the environment. Groundwater elevations in the Equus Beds can vary substantially with time. For instance, groundwater levels in July and August can be several feet lower than in January due to the influence of irrigation water usage. They not only vary seasonally but they also can vary over longer periods of time. Groundwater level monitoring by the U.S. Geological Survey has recorded that some areas in the city of Wichita's well field had declined as much as 40 feet between 1940 and 1993 and that some of those same areas have risen more than 20 feet since 1993. Therefore, it is recommended that historical maximum groundwater levels be used whenever possible to assure that there will be a minimum of 10 feet of separation between the bottom of the lagoon and the groundwater table. The city of Wichita would also like to strongly encourage that an aggressive education program be initiated for Kansas citizens to bring about a better understanding of all water resource protection, both groundwater and surface water and conservation concepts as well as the critical relationship of the Kansas economy and our groundwater resource use. Our state is sadly lagging behind many others in protecting and conserving our natural resources as evidence by the judicial court rulings requiring regulatory improvements over the last several years. So in summary, the city of Wichita reiterates it's continued concern over the protection of the Equus Beds Aquifer and believes that higher standards such as those discussed in the KDHE concept document are required in areas that are designated as sensitive groundwater areas. The city of Wichita applauds the idea of increasing statewide groundwater protection standards as well as taking into consideration site specific information to develop site specific standards for wastewater treatment lagoons of all types. Now we also have an additional request. The city of Wichita also requests a copy of KDHE's Policy Memorandum 90-2, September 1990 titled Industrial Wastewater Pond Liner Policy within 10 days of receipt of these comments. It's stated in supporting documentation that you've posted on your KDHE website that KDHE intends to make this information an enforceable part of KDHE's Minimum Standards of Design for Water Pollution Control Facilities. The city of Wichita has been unable to obtain or find a reference to this document on KDHE's internet site. We also urge KDHE to publish, as required by law, recently affirmed by passage of amended H.B. 2219 and recently signed by Governor Kathleen Sebelius this policy and all other KDHE policies to assure compliance and continued program continuity it is critical that these important documents are made available to the public. And those are my comments.

Don Carlson - For the record, here's a copy for you.

Kay Johnson - Alright, thank you. That's a super delivery. Thank you.

Don Carlson - For everybody's information, that is a supplement to our Minimum Standards of Design. We don't have our Minimum Standards of Design on the website. If you'd like a copy

give us a call, we could send it to you or if you just instead of having a pile of paper yeah thick if you'd like a copy of the policy itself, feel free to give us a call and we'll be glad to send it to you. A lot of the concepts that we posed up here are basically taken off of that policy document. The minimum liner thickness, the dual liner requirement is basically the backbone of that. Early in the meeting I indicated that we were going to be converting policies that are not enforceable over into regulations that are and this is the primary one that deals with industries. Right now we've been able, because of past historical operating practices, a good summary of groundwater contamination sites, various sources that resulted from lagoon systems in the past, we've been able to convince operators that from a liability standpoint they need to look at this kind of protection and most of the consulting firms and design firms have bought into this concept. But to make it legal so we can force the issue right now we can't force the issue, we can put in monitoring wells and as soon as the groundwater shows contamination then we can go back and terminate the operation, require the retrofit once we show that pollution has occurred. What we're trying to do is be a little proactive and create the regulations that would be enforceable so that's what the intent of the regulations are. That was all of the people that had indicated on the sheets that they would like to make comments. I'd open the floor for anybody else that if you've heard something you would like to comment on this evening or to make a statement now I'd be glad to offer you the opportunity to do that. Yes sir.

Unidentified Individual - I could come up with a quick suggestion you might add a bottom line to your registration cards an email address. That's the easiest way for you to reach us.

Don Carlson - Okay. Good idea.

Unidentified Individual - I have a question. These liners back to that. Who tests those, I don't know what I want to say. I want to know how they're tested and what would make the state so interested in, is it a process that can be chemical resistant. Who tests these liners?

Don Carlson - The liner manufacturers, and they produce these liners, I know they conduct compatibility tests for broad categories of wastes such as solvents or metals or organic compounds such as pesticides or hydrocarbons, they do some long term testing to see how their material reacts. Does it age, become brittle, does the plasticizers does it destroy the structural plastic bonds, those kind of things. There are other companies out there that will do this work that provides the same type of information on a contract basis. They will evaluate the material and provide that information to the liner manufacturer. From the standpoint of the actual testing if you're looking for compatibility that's how it's typically done. The composition of these liners are proprietary. Basically this is a trade secret for the industry as to how they manufacture what's in their liner to make it unique and basically that's outside the scope of our technical expertise. We don't have the resources to do the research in this. The bottom line on it is for the industrial wastes we have a real easy pass/fail criteria ultimately. With the dual liner system if we get a leak we will know it. The bowl within the bowl concept does several things. One is it provides a mechanism to tell us when a leak occurs. Two, it prevents the material from being released into the environment so you still have, even though you have a leak in your primary liner, you still

have 100% total containment. It provides a mechanism rather than providing a panicked situation for an operator to try to dewater and get rid of this material it allows for a more thought out approach as to how to handle and dispose of this material. Is it going to be sent off to be recycled, does it have to be sent to Oklahoma to a deep well, does it have to be physically treated within the pond to convert it to some other materials acceptable to be solidified and sent to a landfill, whatever. It gives people some time to react as opposed to an emergency situation. And again all this is done with the idea that the secondary liner is in tact and provides the back up for this and so, again, if the liner manufacturer gives us some false information and the liner fails basically we're going to know about it because of the leak detection system, we're going to require the system be shut down and repaired. At that point in time what I'm assuming is the company's lawyers and the liner manufacturer's lawyers will go at it and they'll figure out who did what to who and who's responsible. From our standpoint, we really don't care. We just want to make sure that whatever is put into that liner system stays in the liner system and doesn't get out into the environment.

Unidentified Individual - I have another question. Do you have any data on all the cities that have liners in their lagoons?

Don Carlson - I personally do not know whether we have that kind of data or not. I know we've got information as to what cities have lagoons. I would make a suggestion that you might want to contact one of two people. Rod Geisler (785) 296-5527. The other gentleman if you call in on that same number and he's not there the other gentleman that may have access to that information but I don't know if we've got that in a database would be a gentleman by the name of Ed Dillingham. His number is (785) 296-5513. Those would be the two gentlemen that would have the information if it's available.

Unidentified Individual - Can you tell me a little bit more about the selection of a 10 foot separation. The point was made earlier that might be alright in certain conditions and not alright in other conditions.

Don Carlson - Well right now we have in our current design standards that have been in effect since 1978 a 10 foot separation distance requirement. So that's nothing new. The provision and the nuance here is that in the current design standards there was the capability of looking at a variance. In other words somebody could come down and suggest putting in a double plastic liner system and offer that for a shallow groundwater area. What we were proposing and throwing out and wanting people to comment on was the flat out prohibition. That's the nuance. The 10 foot separation distance has been in existence as an enforceable requirement of our minimum standards since 1978.

Unidentified Individual - And the experience with that? Is that adequate regardless of the geology or the soils?

Don Carlson - I can only speak on the industrial side and I don't think we've allowed any on the

industrial side that have had less than 10 feet. I can't speak for a lot of the municipal lagoons that would have probably predated the industrial lagoons that I deal with that may have had sites that had shallow groundwater so I can't really speak to that right now. Yes sir.

Unidentified Individual - On the dual liners the same material for both the liners or do you have different material for one vs. the other in case of a failure. If you've got the same material both of them may fail so that's why I was wondering. Is there any requirements on that?

Don Carlson - Basically we're looking at the same material. The idea though is we will want that material, obviously if the primary liner fails in two days we've got problems. If the things been sitting in there for 15 months and fails then we've got some back up time to deal with it. What we're counting on right now is if I don't have the mechanism that I can personally determine when the first primary liner is going to fail then how do I know what material to choose for the secondary liner so it doesn't fail as fast or faster than the primary liner. So what we're basically looking at is, at some point we have to basically defer to the expertise of the liner manufacturer. This is his product, his formulation. We don't have the details on it. So we have to put in some type of a check for the industrial process waste that's the secondary liner. Even if the secondary liner fails at a minimum it throws up the red flag and identifies that a leak has occurred and we require to get the pond dewatered. And as soon as we get the pond dewatered then we eliminate the source of the pollutants.

Unidentified Individual - I see. As a follow up question on that, will KDHE keep track of the material that's put in these lagoons so if there's a trend starting that you will be aware of what material may be breaking down.

Don Carlson - Again, I don't know what we would do with it because we don't know how that impacts what specific material out of 15 different pollutants in there was the one that attacked the liner. That's what I'm saying. We don't have the knowledge, the expertise, the information to make those kind of calls. So what we're going to have to do is put some type of a pass/fail criteria in there. You can use this until it fails and at that point in time you either quit generating the wastewater or you make the necessary repairs and take the system out of service and make the necessary repairs and then put it back in. But the key in there is having some type of monitoring system to make the determination as to when a problem occurs early.

Unidentified Individual - The reason I was asking that is you may have so many lagoons in a certain area that's holding and those liners are starting to fail and you've got a trend started that you might be able to stop other liners before they actually start leaking. That's the reason I asked that.

Don Carlson - Yeah. Right now we've not seen a problem with the industrial waste in the liners. Breaking down that way we've had more problems, we've had some industries release some heavy gases that were very volatile that caught fire basically obviously it only burned the liner above the water line but it basically burnt the liner. That was an obvious problem and is easy to

detect. We've had places where the lagoon hasn't been secured and coyotes get in there and dig holes in the liner, varmints that something you're going to have to look at. Isolated spots, we've had people go out there, vandals basically take guns out there and shoot liners. There's a lot of things that can happen out there that we try to address but these are fool proof. Yes sir.

Unidentified Individual - One of the things that I was curious about is there any, when we're talking about what can go down below the lagoon intentionally, what would be the circumstance on a day like today where you get a whole lot of rain and maybe the things going to overflow.

Don Carlson - There are currently design standards for what we call non-discharging lagoons and non-overflowing lagoons. Typically what we require, there has to be a, if you're going to design a lagoon there has to be a hydraulic water balance calculated. Basically the amount of the material that you put in, if we're talking about plastic liners it's the material you put in, the amount of evaporation and the amount of precipitation that fall on the liner basically has to at maximum operating depth basically not overflow. On top of that we require them to include three foot of freeboard. So that takes into account the very wet year out of the average. So that's the best we can have. Recently we've seen some situations where some of these systems are operated through land application systems to keep them non-discharging. They're small. They can't be non-discharging through evaporation only. In those cases we've had problems where basically the, believe it or not they didn't land apply the stuff because for whatever reason the water depth got fairly deep in the ponds and with the high winds out there we've got slop over. Wind wave action. The run and pitch of the waves up these plastic liners is fairly slick. So we've had some wastewater slop out of some of these lagoons. Basically they're at some livestock facilities. That's being addressed. Right now the types of problems that we've seen are more mechanical, physical problems as opposed to chemical problems and degradation on liners. There have been a lot of old liners out there. There's a number of projects. My part of the exercise dealing with municipal, commercial, and industrial wastewater lagoons is only one aspect of a number of these pollution sources that are being looked at. We have a set of regulations that are being adopted or have been adopted as temporary regs right now that deal with the design and construction of brine ponds at underground storage operations that store liquid petroleum gas, natural gas under pressure in salt formations. These ponds contain concentrated brines. So we've got regulations addressing that. My counterpart in the Livestock Waste Management program is going to be addressing similar concerns, similar issues, have similar requirements for livestock waste management requirements. So this is one of a number of pollution sources that are being looked at. Yes sir.

Unidentified Individual - Could KDHE look at how many communities in the state would not conform to that just blanket input on the separation in order to get an idea that if there would ever need to be an expansion for that community system you're automatically going to either require them to go to a new location, total new location with everything for a mechanical plant. Just to get an idea of what that sort of regulation might place on a small community.

Don Carlson - We will probably look at that as a part of the regulation process but again these

are, I'm not talking about regulations right now. These are issues and concepts that we've tossed out and we want feed back on. You know, one obvious comment would be is if I have 50 acres of ponds out there right now and I want to add another 10 acres why do I have to put in a synthetic membrane liner for that one or why is that one cell going to be denied. Because of the other 50 acres out there, if there's no problems. So these are some of the comments that we've had thrown at us already to consider.

Unidentified Individual - I was wondering why that minimum separation couldn't be based on scientific study. Hydrogeologic study, going to be used for one of these site specific designs. In locations where you can't get it.

Don Carlson - Are you talking about the 10 feet as definitively identifying the presence of groundwater, 10 feet or the pollution potential of a pond at 9 feet vs. 10 feet.

Unidentified Individual - Well I guess what I'm referring to is if you put a 10 foot minimum that if you've got an existing community of lagoons that currently does not meet that and cannot meet that implementing some sort of a variance based upon hydrogeologic study.

Don Carlson - That last slide I showed you there, the big variance. That is one option that we can consider. Again, to spark comments what we threw out as say what we're looking at right now is just the outright prohibition. You're not the first one to make that comment for consideration. We'll go back and look at it.

Unidentified Individual - I guess my comment would be I still think we need a variance provision for those situations which are unavoidable.

Don Carlson - Anybody else have any other comments. Yes sir.

Unidentified Individual - Regarding the grandfather clause. On the proposal for existing lagoons does the agency have any plans on how they intend to evaluate whether it poses a threat or not?

Don Carlson - Not right now. Again, this was just an idea that if we're going to develop regs is this something that we ought to be looking at. If you have some recommendations we'd love to see them. Yes sir.

Unidentified Individual - If KDHE comes up with a criteria to disseminate now that if you have a leak in the liner and you need to disseminate whether it's the top liner or the bottom liner.

Don Carlson - We're only worried about the top liner.

Unidentified Individual - But if you have leak going into your leachate area how do you disseminate and is KDHE going to come up with a test on if it came out of the top or the bottom.

Don Carlson - Well first of all we're going to want to have 10 feet of separation so hopefully we're not going to have groundwater or fluid coming from the bottom up through the sump.

Unidentified Individual - What about like right now? You got groundwater in close proximity you can't come into the leachate from the bottom.

Don Carlson - Typically the way the liners that I've seen are designed both liners tie into the top of the dike so there's really no way for the groundwater to move over the top of the liner between the bottom secondary liner and the top of the primary liner. From the standpoint of monitoring, how we tell whether it's a leak vs. something. It's kind of a misnomer when we say impermeable synthetic membrane liners, they're not impermeable. There is a very small amount of fluid that will move through a liner. There is vapor transmission that will go through the plastic, the vapor, the water vapor, fluid vapor will coalesce on the bottom side and condense and generate a fluid. There are typical manufacturing defects, pin holes, microscopic cracks, whatever when they manufacture these and part of the provision that we currently have in our design policy one of the things that we're requiring people to develop and again this is information from the liner manufacturer and the designer is when they design an impermeable synthetic membrane liner right now what we want to have is information from the liner manufacturer as to what the transmissivity rate of his liner material is. And that's going to be dependent upon what the liner's made of, how thick it is and basically what the material on the outside is, but it's primarily a function of his design and the thickness of the liner as provided. Information that they all have as to roughly based on how many square feet of material is provided, what are normal manufacturing defect rates, and these are very, very small but these are also an additive. What we're looking at is transmissivity rate, minor manufacturing defect rates, and what the manufacturer has deemed to be as an acceptable seam leakage rate if the seams are well constructed and installed. You can't get 100% in there. Typically we're talking about very, very small quantities in gallons/acre/day. If you have, the best way I can explain it is if you have a hole in your liner the size of a pencil lead you're going to basically flood or increase the volume significantly. The intermediate monitoring leak detection system between the two liners typically what we're requiring is that the material fluid that collects between the two liners in a non-leak situation be collected, sent to a monitoring sump, and be able to be pumped out and put back into the pond and we can monitor that flow rate. There will be a steady state reached and once you get a leak, a seam rip, a tear, an actual problem with the liner, the volumes that you start pumping will be significantly greater. It would be very, very obvious. The second thing that it does, the material that through the liner through transmissivity is going to be a different quality than the water in the pond itself. By having this monitoring sump that we pump out of and monitor fluid volumes we can also collect samples of the material and analyze it. So if we've got concentrated brines in the pond and concentrated brines in the leak detection system we know we've got a leak as opposed to fairly, say 30,000 chlorides vs. 180,000. So there's a number of ways you can identify depending upon the designer you can get very creative. Some of these brine ponds that we have out at the underground storage operations are very large. They're humongous ponds. One way we try to convince people that if in the design phase if you break up the pond into segments you have certain segments of your pond bottom drain to certain leachate collection

sumps and you get a leak in one part of the pond and you're flow in that monitoring sump is increased where the other ones aren't that will help you pin point where the leak in the pond is. It won't identify it, but it will narrow it down so when we take the pond down and start searching for it you don't have to look over the whole pond. So there are a number of things that designers and operators can do to detect when the leak occurs and address it then. Everybody's eyes are glazing over. If there's no other comments or questions I appreciate you folks coming out in the rain. Secretary Bremby has basically indicated in a number of meetings that he wants to see regulations developed as soon as possible. In several of the meetings he made the statement that he'd like to see regulations by the end of the year. If you remember the first chart I had up there, the time frame for adopting regulations if you start back calculating there's a very short turn around time so that means when I get back to the office we will have to be turning things around fairly quick. Again if you think of something after this meeting that you would like to add for our consideration we will basically continue accepting comments until the 28th. Dorothy Geisler, in the notices that we sent out and in the Kansas Register, her phone number, mailing address and email are listed. If you get it to her she'll get it to me. If any of you folks want to have my business card to send it directly to me I'd be glad to give you my business card after the meeting.

Unidentified Individual - Can we email comments in?

Don Carlson - Yes. I appreciate you folks coming out in the rain. Thank you very much.

Proposed Lagoon Liner Regulations
Public Hearing -Wichita, KS
April 23, 2003

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